

# SUPPLEMENT.

# The Mining Journal, AILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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## Original Correspondence.

### FOREIGN MINING AND METALLURGY.

vention has been concluded between the Government of the Duchy of Luxembourg and certain forgemasters of the Grand Duchy of Luxembourg, by virtue of which the latter receive a concession of about 125 acres of mineral lands. Metz and Co. will receive 200 acres; Charles and Jules Collart, 45 acres; Philippe Servais, Majerus, and Co., 37 acres; the Luxembourg Furnaces Company, 200 acres; Giraud and Co., 45 acres; the Blast Furnaces Company, 90 acres; and Gouner, Munier, and Co., 90 acres. The concessionaires undertake to pay to the State 50 consecutive years a rent of 10,000 francs per annum, to be paid in proportion to the extent of land cultivated. The first payment of this rent is to be made Dec. 31, the last Dec. 31, 1923.

A sensible fall has taken place at Paris in copper, no very large transactions having been concluded. At Havre, Chilian is made 91 francs; ditto in ingots, 96 francs; and Corocoro minerals (standard), 96 francs per ton. At Marseilles, Spanish copper in plates 92 francs per ton; and small refined ingots, 92 francs per ton. In the financial crisis has not failed to exert a certain influence on the markets. Transactions have been confined to the most urgent needs, speculation holding absolutely aloof. The monetary system and the disorganisation of the London tin market had an unfortunate influence at Rotterdam; Banca has made at Paris there have been no transactions worth mentioning; however, at Havre or Paris, has made, 150 francs; Straits, ditto, English, delivered at Havre or Rouen, 152 francs per ton. The market has remained without change; Banca has brought 150 francs; and English, 154 francs per ton. In consequence of the English and Dutch tin markets quotations German markets have been generally declining. At Paris there has been a great amount of business passing in zinc, but it has nevertheless, slightly improved. The German zinc has been generally firm.

There has been rather more doing in the Belgian iron trade, and the prices have even exhibited a slightly upward tendency; the limit which appeared to be prescribed a week since has somewhat exceeded. Some contracts for plates have been made at 167 francs, while merchants' iron, No. 3, has sold at 137 francs, bringing back the basis price to 117 francs instead of 117 francs. At the same time, the activity has not been very great, and the mills have especially restricted their production. The activity in the activity prevailing is especially attributable to the fact which the Belgian works have with German purchasers, the pretext or another, refuse to accept the execution of contracts they concluded when the price of iron followed an upward trend, which appeared as if it would never attain its full development.

The complaints of Belgian ironmasters on the subject of the sales of their German clients are general, and many of them are to be paid in full before delivering the balance of such as they may have engaged to supply. They thus prefer to sustain interminable legal proceedings, in which loyalty always certain to triumph over bad faith. At a sale of old iron by the Belgian State Railways, old iron from the tyres of carts, tenders, carriages, and trucks realised from 7 francs to 12 francs per ton.

not much to note in connection with the French coal trade, market has been very indecisive, and very little business passing. At the same time quotations are maintained with no immediate fall in prices appears to be apprehended. Contracts have been entered into in the Pas-de-Calais, and one of these contracts, relating to 15,000 tons of all-iron, has been concluded at 17 francs 100 per ton.

French iron trade remains quiet, or rather, perhaps, undetermined, beginning to appear. In the Champagne group of pig, for refining, is quoted at 6 francs 16s. to 7 francs 4s.; mixed coke, 6 francs 8s. to 6 francs 12s. per ton; ditto coke-made, 6 francs 4s. to 7 francs 4s. per ton; No. 1 coke-made pig, for second fusion, 7 francs 12s. per ton; No. 3 ditto, 7 francs 4s. to 7 francs 12s. per ton; No. 1 charcoal, 6 francs 4s. to 9 francs 8s. per ton; first-class rolled iron from coke, 12 francs 8s. per ton; mixed ditto, 12 francs 16s. to 13 francs 4s. per ton; charcoal-made, 13 francs 12s. to 14 francs per ton; first-class special iron, 12 francs 8s. per ton; first-class sheets, coke-made, 11 francs 12s. per ton; ditto, charcoal-made, 14 francs 16s. to 15 francs 4s. per ton; 14 francs to 14 francs 8s. per ton; machine, No. 20, coke-made, 14 francs per ton, &c. Notwithstanding the reduction which has been made at the reduced rates. A blast-furnace of very great power has just been constructed by M. Desforges at Dizier; its production, when in full operation, will be 100 tons per day. This is the first blast-furnace of these dimensions in France, the largest furnaces of the country not possessing more than 20 or 25 tons. The furnace is supplied with all the most improved appliances, and proposes to devote himself to the production of grey iron. An adjudication has just taken place at Paris

for the supply of the pipes, &c., required in connection with the distribution of the waters of the Vienne in that capital. MM. Boigues-Rambour and Co. and M. Caillot de Wailly obtained the contract for the first two lots, and that for the third lot was secured by the Vienne Metallurgical Company. The contracts were let at the prices of the original estimates.

The Belgian coal trade presents scarcely any change; at the same time, there has been no great amount of business passing. Consumers maintain an attitude of absolute reserve, relying, as they do, on the fall which is expected to be witnessed, since it is the general conviction that colliery proprietors will not be able to maintain much longer the prices which they now demand. Symptoms of an approaching fall are becoming more and more numerous and significant, and one of these is the increase in stocks. Thus, the stock held in the Charleroi basin on March 8 was estimated at 41,040 tons, while the corresponding stock had increased May 10 to 150,000 tons. This re-constitution of stocks in the Charleroi basin is all the more significant since it has occurred notwithstanding rather considerable deliveries made to sugarworks. The supplies of the sugarworks will in all probability be completed in the course of next month; several of these works have now all that they require. When the demand for the sugarworks subsides a fresh accumulation of stocks will take place, and it will become very difficult for coal-owners to maintain the prices now quoted. We may add that the coal of the Ruhr basin continues to flow into Belgium to a large extent, and presents a rude competition with Belgian coal. The competition of the Ruhr coal is felt even on the export markets of Belgium. Thus, the report of the Northern of France Railway Company states that for some months past Ruhr coal has been forwarded to Paris, and that this movement of Ruhr coal promises to acquire a serious development. The coalowners of the Ruhr basin appear resolved to sustain energetically a struggle with Belgian colliery proprietors, since as soon as the latter make concessions the former also propose reductions. We must not also lose sight of the fact that most of the great French railway companies, instructed by experience, and fearing that they should be taken unawares and be compelled, as they were last year, to pay extravagant prices for the coal which they require, have laid in their supplies early this year. Thus the Lyons-Mediterranean Company has now in stock 90,000 tons of combustible, which will provide for its consumption for 45 days, and the Eastern of France Company now possesses 82,000 tons, or sufficient for 69 days' consumption. Two other companies, the Western and the Orleans, have also taken precautions, and have laid up a sufficient stock of coal to render it unnecessary for them to submit to the exigencies of colliery proprietors. Upon the whole, it may be said that there is a good deal of stagnation in the Belgian coal trade, and also, that this stagnation threatens to continue, and to involve with it a fall in prices. The Belle-et-Bonne Colliery Company, at Fléau-Jemappes, will pay on June 20 a dividend for the second half of 1872 of 3 francs 12 francs per share.

### COLLIERY ACCIDENTS—HERMON PRIZES.

SIR.—Referring to the letter of mine, to which you kindly gave admission in your valuable paper a short time ago, you added a note to the effect that it was well understood that only working miners were to compete for the prizes. Since seeing that note I have made a search for the paper I received from Mr. Hermon, on the faith of which I gave the necessary time to preparing an essay for competition. I enclose the paper referred to. It contains two letters, signed by Mr. Hermon. In the first you will see that he offers the premiums to practical miners. Now, Sir, every mining engineer considers himself a practical miner, for were he an unpractical miner he dare never aspire to be an ornament to his profession; but since you may possibly differ from me as to the meaning of the phrase "practical miner," I beg to refer you to Mr. Hermon's second letter, dated Nov. 16, 1871, in which he says—"I find from communications I have received from other localities that it will not be well to limit the area to the coal mines of Lancashire and Yorkshire only, nor to confine the competition to any particular class. The object in view is to obtain, in as concise a form as possible, the most practical suggestions for the preservation of life in mines, and the avoidance of the terrible explosions we all deplore." Surely, Sir, this language is plain enough. Mr. Hermon does not confine the competition to any particular class, and as his object is the preservation of life in mines he could not be guilty of the absurdity of excluding from the competition the class most competent to compete. I trust that the examiners who are deciding on the merits of the several competitors have before them this letter of Nov. 16, 1871, and I have no doubt you will now admit that you had been misinformed when you wrote the article of which I complained.

#### A RESIDENT COLLIERY MANAGER.

OFFER BY MR. E. HERMON, M.P.—The newly-elected Mayor (Mr. Miles Myers) has just received the following letter from Mr. Edward Hermon, M.P., junior representative of the borough:—

Preston, Nov. 9, 1871.

MY DEAR SIR.—I have felt deeply the terrible calamities that have befallen our mining population of late, and have considered whether anything could be done to prevent these catastrophes. With this object in view I propose to give a premium of 200/- for the best essays on the subject, to be competed for by practical miners in the coal fields of Lancashire and Yorkshire—say, 150/- for the first prize, and 50/- for the second.

In your official capacity as Mayor and Coroner, I am sure you will assist in gaining the attention of those concerned to the subject.

I have no doubt we shall find three able and impartial judges to decide on the merits of the pamphlets, one of the conditions being that phraseology or spelling shall not influence the decision, but the prizes to be awarded for the most useful and life-preserving suggestions:—

EDWARD HERMON.

To Miles Myers, Mayor, &c.

THE OFFER OF MR. HERMON, M.P. (to the Editor of the *Preston Herald*).—88: Referring to the letter you kindly inserted in your paper of Saturday last, I find from communications I have received from other localities that it will not be well to limit the area to the coal mines of Lancashire and Yorkshire only, nor to confine the competition to any particular class. The object in view is to obtain, in as concise a form as possible, the most practical suggestions for the preservation of life in mines, and the avoidance of the terrible explosions we all deplore. I propose that the pamphlets should be sent in by January 31 next. Their destination, together with the names of the judges, will be announced in a future advertisement.

EDWARD HERMON.

From the letters of Mr. Hermon, given above, it will be seen that our own views on the subject of the prizes have been fully borne out. In the first letter of Mr. Hermon it is distinctly stated that the essays were "to be competed for by practical miners." The subsequent letter to the *Preston Herald* qualified the previous one by stating that the competition was not to be confined "to any particular class." It is, however, clear that the actual offer was made to "practical miners," and to our thinking a mining engineer is no more a "practical miner" than is a civil engineer a practical excavator, or "navvy." "A Resident

Colliery Manager" has availed himself of the phraseology of Mr. Hermon's second letter to a newspaper, and singularly significant, indeed, as it has turned out he was the only mining engineer who did so. With the information thus before him it remains to be seen whether our correspondent, "A Resident Colliery Manager," will put himself in competition with men who are miners pure and simple, and thus place himself in a position which it appears no other mining engineer would do.]

### PREVENTION OF ACCIDENTS IN COAL MINES.

SIR.—As the question of accidents in coal mines, and indeed everything connected with this very important staple of commerce and national wealth, is at the present time so freely ventilated, perhaps you will find room in your interesting and popular paper for a letter the writer addressed to the member for Preston, Mr. E. Hermon, on this subject in February, 1872, to which he has received no reply beyond a request not to publish it immediately, on the writer's addressing Mr. Hermon asking his permission to do so after 12 months had elapsed. The writer again addressed Mr. Hermon on March 19, without any reply; and upwards of 15 months having now elapsed he considers himself privileged to communicate the contents of the said letter to the public, as follows:—

GEORGE PEACOCK.

Starcross, Devon, May 20.

EDWARD HERMON, Esq., M.P., Preston, Lancashire.

"SIR.—Seeing a leading article in the *Mining Journal* of the 27th ult., respecting your liberal offer of a reward for essays on prevention of accidents in coal mines, I sat down to put my views on paper upon this important subject, but as I observed by the supplement of the same Journal of the 3rd instant that the competitors must only be working colliers in Lancashire and Yorkshire, I did not forward my ideas to you; however, on second consideration, having had some experience as a practical working coal miner in Chili, and never met with an accident, and having studied the subject from my youth upwards, I venture to offer them to you *quantum velut*, and first of all will preface my remarks as to the foregoing observation:— Many years ago I was residing in Sunderland, and visited from time to time several of the local collieries at Haswell, Hetton, Felling, &c., going underground both previously to and after serious accidents had occurred from fire-damp, &c., thereby acquiring a rudimentary knowledge of the working of collieries in all its branches, and the geological features of coal formations, &c. In the year 1840, after spending 12 years active and continuous service in the Royal Navy as a Master, I was invited by the late Lord Abinger, at the solicitation of an American gentleman, Mr. Wm. Wheelwright, to take the command and management of an enterprise under the British flag for establishing steam navigation in the Pacific; and as the Lords Commissioners of the Admiralty would not grant me leave for this object, I was reluctantly obliged to resign my commission as a Master of a line-of-battle ship, and sacrificed all my time in the navy and title to half-pay, &c.; however, I had the honour of conducting the first steam ship that ever navigated its waters through the Straits of Magellan in September, 1840.

I had particular instructions from the board of directors to make myself acquainted with the geology of the coast, as to the probability of finding coal in the south of Chili, as Lord Cochrane had reported its existence near the bay of Talcahuano. I arrived in this bay in October of that year, and after strict enquiries could learn nothing from the British Vice-Consul, or anyone else of any coal having ever been found in that neighbourhood. I proceeded, however, to examine the cliffs in the vicinity of the town, and finding a sloping cliff, called the Morro, to be composed of magnesian limestone, like those near Sunderland and Hartlepool, also both red and white sandstone with bands of shale, clay, I determined to prove this Morro, with permission of the owner, by hiring a gang of men with mattocks to slice down the surface after clearing off the underwood, when I had the satisfaction of discovering a virgin seam of true coal about 2 ft. thick, some 20 ft. above the level of the sea. On the face of this seam I commenced to drive an adit, and found, after working off the friable surface, a good hard bituminous coal as we proceeded into the hill—a piece of the coal first broken is now in the Albert Memorial Museum in Exeter. I will not trouble you with detail, and in relating all the difficulties I had to surmount in this (at that time) primitive country, I had to be my own engineer, viewer, pit-sinker, and drift proper, boring rod and pump manufacturer, &c., with the assistance of the ship's engineers, a whale ship's carpenter and blacksmith. The pumps were made of 2 in. plank, dovetailed together over brown paper and white lead, banded with clasp hoops screwed together, the pump boxes are square: these worked very well; so that I ultimately succeeded in winning some 30,000 tons of coal from this spot, which was used on board the steamers of the P.S.N. Company. I also discovered coal at Concepcion, Coronel, Lota, and on the Island of Chiloe. The coal mines at Lota and Coronel are now producing an immense annual output, although I, as the discoverer of true coal and practical pioneer of this enterprise, never reaped the slightest benefit from it. I also discovered coal on the Island of Amortillado, at the mouth of the River Guyas, in Ecuador, and having crossed the Isthmus of Panama several times from the year 1832 to 1846, I pointed out places not far from Panama where I thought, from geological appearances, coal would or might be found, and coal has since been found at these places. But not to enlarge on the foregoing facts—in proof of which I beg to enclose an authentic document herewith—I will at once proceed to state the views I have always held for the last 45 years as to the simple ventilation of coal mines—to have a powerful air-engine erected near the mouth or mouths of coal pits like those which Mr. Brunel had on this South Devon line for exhausting the tubes of the "Atmospheric Railway," as it was called; and although this idea had long been entertained by me as a practical man, after witnessing the terrible destruction of life and property, as before mentioned, yet it came more forcibly before me whilst watching the action of the powerful atmospheric engine at work at the Starcross Station in 1847 and 1848; and after the dreadful accident which occurred, I believe in 1849 or 1850, I think near Wigan, I wrote to the Inspector-General of Coal Mines, entering fully into the subject, but regret to say that I have mislaid the copy of my letter, neither can I now recollect the name of the Inspector at that time, nor were exactly the accident happened—no doubt it will be in the archives of the Inspector's office. I recollect stating in my letter that as the atmospheric railway between Exeter and Newton was going to be done away with, I had no doubt the engines could be bought for little more than their value as old iron; that one engine was capable of pumping out so many thousand cubic yards of air charged with carburetted hydrogen, smoke from gunpowder, &c., in an hour—(I have unfortunately mislaid my data for this also)—using only the refuse small coal for fuel, which is allowed to burn away on the heaps, so that the expense would be very trifling. That what I proposed was a capacious chamber of wrought or cast iron (an old boiler would do) fixed at the bottom of the shaft, recessed, if necessary for space, with a suction pipe from 25 to 30 in. diameter on top, and a series of flanged openings as required for the various drifts or galleries branching off from the lower part at ground level for attaching cast-iron pipes—say, for uniformly 9 in. in diameter or upwards each, all leading from the different workings or levels into said chamber lying close to the ground at the sides out of the way of tramping and hauling, and having at every 50 yards or so a flanged opening with a hood or bell-mouthed funnel about 2 ft. in diameter, fitted with a lid, the size of pipe like the lid of a tea-kettle, to be removed or fixed at pleasure, or a simple disc valve below the hood, a self-acting vacuum valve to be fitted on the top of the chamber with a wire attached to the governor of the engine so as to regulate the speed or stopping of the engine as required. By this simple means the carbonyl acid gas, carburetted hydrogen, foul air, &c., would be drawn off into the chamber by constant pumping night and day, as fast as it became generated or opened into, and in order to allow the goaves to be drawn off, by removing one of the hoods or bell-mouthed funnels and attaching an elbow in continuation of tubing or piping leading into the goave by shutting the disc valves or putting on the covers beyond (where the air was fit to work in) these goaves would be immediately cleared. All bolts, nuts, &c., to be of one uniform size, with a spanner attached by a small piece of chain to each hood, under the charge of the leading hand of that particular level, and under the orders of the viewer. Of course if the levels were all clear of gas, the discs may be closed, and the engine stopped, although by keeping the hood at the ends of the levels always open a free circulation of fresh air would be kept up if there was no gas or foul air to pump off, the expense being so trifling.

Although not exactly relevant to the subject, I may add that I also recommended, in order to raise a fund for establishing annuities to the widows and orphans of the poor fellows who may have lost their lives in coal mines, and to provide remuneration and smart money for such as might have become wounded or disabled beyond their own control, that an Act of Parliament should be applied for to levy a tax of 1/4d. per ton on all clean coal sent from the screens at the pits' mouth, to be paid quarterly to Her Majesty's tax collector for the district under the supervision of the local inspector, and pensions, remuneration, smart money, and doctors' bills, &c., connected therewith to be paid out of such fund under Government inspection; and probably improvements in dwellings might also be paid for out of the same fund. At that time I conceived that the quantity of coal annually raised in the United Kingdom was about 75,000,000 tons, which at 1/4d. per ton would realise for this fund (say) in round numbers 156,000/-, or with the present output over 200,000/- per annum? I also recommended that it was worth the consideration of the Chancellor of the

Exchequer to impose a duty of 6d. per ton on all clean coal delivered at the pits' mouth, and 1s. per ton on all coal exported to places abroad not being colonial possessions of Great Britain, which would allow almost a total reduction of the income tax, and would not be felt oppressive by any one."

GEORGE PEACOCK, F.R.C.S.,  
Formerly a Master in the Royal Navy.

CAPT. THOMAS PARKYN, AND TIN DRESSING.

SIR.—A great deal of Capt. Parkyn's letter, in last week's Journal, is quite unintelligible to me; this may have arisen from one or other of two considerations—its being either above or below my comprehension, and making, if it makes any impression at all, one not very flattering to the writer. If I had set out to assail his dressing-floors, as he calls them, perhaps he would not be better able to defend them than he is now his position regarding the Great Royalton Mine. There is here and there, however, an intelligible streak or two in the letter, and to these I will briefly reply.

First, he complains of my parading his name before the public; but that is a charge more intelligible than correct. Ought he not rather to complain of "Plumbum Album" for doing so? It was him, and not me, who did that, yet Capt. Parkyn seems to have approved the act by taking upon himself to defend it. Secondly, he further complains that I do not say anything about stamps grates. Why should I? I was not aware that there was any controversy between myself and them. One thing I may say, and that is that I am without prejudice in the matter, and that before I commit myself to any course in this respect I always consider the character and quality of the tinstuff to be stamped, and disregard wholly routine, as practised by others. With regard to brains, their culture, and the nice adjustment of their equilibrium, which Capt. Parkyn seems to fall back upon as a last resort with so much confidence, I have nothing to say personally, as I think we are poor judges of our individual possessions in that line; I rather prefer deferring to the judgment of others; their verdict, from its being much less partial, is much more likely to be correct. By-the-bye, so far as him and myself are concerned, the *Mining Journal* may be found a faithful reflector of our individual capacities in the matter of brains; and it certainly will do so if he is disposed to prolong this controversy; and, as there is nothing further to notice in Capt. Parkyn's letter, I shall, without proceeding further, await his reply to my last.

MINE AGENT.

ON TIN DRESSING—CAPT. PARKYN'S "SAVE ALL."

SIR.—I notice the remarks of "Agent" in his letter in Saturday's Journal, where he says he does not indulge in personalities. This appears to be very singular, as through the whole of his letters he shows some spleen against Capt. Parkyn, on he is a very narrow-minded man, one that would live himself, and "Clearall," if allowed and knew how to do so. All mine adventurers are becoming aware that it is time to be up and doing when they have undeniable proof that over 100,000*l.* worth of tin is annually wasted, a large portion of which goes into the sea, benefitting no man. Then see what a quantity is lost lying about our mines. I first take Drake Walls, a mine stopped through poverty, when 70,000*l.* worth of tin is found on the mine that has been stamped to all but atoms. Another large portion is carried into what was called distilled water, to within a few yards of the ebb and flow of the tide. Had they not been compelled to catch it there who would have ever seen that tin was so carried off? This caused the Duchy officers to open their eyes, and see how they had lost their dues. These officers are men with an eye to business, and at once set about to ascertain how this tin got all but into the sea. They had all the refuse on the mine assayed by well-known and experienced men, who proved that 950 tons of tin is now lying about on the mine, worth (say) 90*l.* per ton—85,500*l.* I ask how much more is at the sea side? I should set it down, with what is on the mine, and by the way, at 100,000*l.* Then I ask "Clearall" to tell me how much was carried over the slight barrier between it and the sea, where it is lost for ever? I will not now notice the value of that portion.

I next take East Basset lost tin, which "Clearall" called 70 tons, found on an abandoned mine. This was what it fetched at a sale. Then I would ask "Agent" or rather "Clearall," if he were the purchaser of that? May I ask, again, if he would risk the purchasing and taking out of that tin if he did not value it at over 100 tons of marketable tin? Then I ask him if the agents who do the like are not either fools or rogues? I will not mince these points. Then, I might mention a mine from which they rose in the last working 100,000*l.* worth of tin. Since it was abandoned over 100,000*l.* worth has been returned. Are adventurers to be robbed by fools—or what may I call them? I know in another place a mine from which a large quantity of tin was raised, making heavy calls, till the shareholders could stand it no longer, and the mine was abandoned. The agent found a man with money at command to join him, and they purchased the refuse. But they clear all, and say nothing. I may some day get at the value of the tin they returned since in their hands. I could name 40 such instances. These tin-wasting mines are not half out yet.

When last at Redruth I had to go to the foundry. Having occasion to go into the house garden, what was my surprise to find it all converted into frames and floors working. I did not count them, but I could see some that appeared to be even in the foundry. I was a stranger there, and said but little. In my way back I saw a man, whom I thought to be "Agent," looking over the hedge. I asked him if he had frames there; he said that he had no room, he wished he had. I asked if he could not find a corner for two or three; he said he had a spare back-house, or kitchen, and that he thought of putting up one or two in it. I further asked him if much tin was coming down, and he said it was coming down as though it was dirt. I asked him from where, and he said from Pen-an-drea Mine. I did not think of asking how many frames were on the stream, neither do I know the valley; there may be hundreds for what I know. I have since been informed the tin waste first goes from the mine into Wheal Sparnon adit shaft. I am not aware if portions empty into any old mines below, if so it is far preferable to going to sea, as it may have there a chance to grow again.

A friend of Capt. Parkyn told me it was not "Agent" that I saw near Redruth, but his opponent was a man that has managed a tin mine, but it was a dead pull, ever making calls, till it emptied the pockets of the shareholders, when "Agent" and "Clearall" managed to get its refuse. Be this as it may, I can only say that "Agent," whoever he may be, should be placed with the class known as being defective of intellect, and far behind the age we live in, though he may be a man who has reserved his bread and beef; but I tell him he is not made of the right materials, if he were he was bound in common honesty to have given Capt. Parkyn credit for coming out, if only to stimulate the dilatory to move on and keep pace with the times, and not attempt to throw cold water on a persevering man,—a man who is making a great effort to retain 100,000*l.* worth of tin from going annually off the mine. If he were not on good terms with him, he should have let him go on and work out his own salvation. If he failed it is only what hundreds have done before him. See our Cornish engineers; they all but run mad after the combined engines. They all failed, but that is a point gained as to who will do it again. So it will be with Captain Parkyn's "Save-All," if he fails.

I have read each of their letters. I have not seen that Captain Parkyn has attacked "Agent," or that "Agent" has ever tried his machinery, or even asked him a single question so as to raise a point to go into. Then who can say that he is anything better than narrow minded. If he is a man who can bear daylight let him give his name, and if not hide himself in a bush; but not shoot anyone on a dark night from behind a hedge. "Agent" says that Captain Parkyn stated that I said the beach below the Red R ver contains 20 lbs. of tin per ton. I did say so. The allusion is that what everybody says must be true. I was never there, but the squatters even say so. "Agent" is the only one I have ever heard dispute it. Then I ask if he has ever examined the works; and if so to come out like a man and say so; and if he cannot let him remain in the dark, or behind a hedge, till the shooting season, when someone may shoot him, exposing him to be a hiding spright.

I notice that "J. S." is out again, and denies my assertions re-

specting his boiler and cylinder. I beg to tell him I hold a letter from person present when they first tried to start and drowned the cylinder. When I was there the first time "J. S." will remember he showed me how he had lowered the boiler from 5 to 7 feet, to prevent it, and that would not do—then it would not work. He then threw it out, and fixed the great boiler lower still. I do not know if that drowned the engine again, but he shut it all up. This was reported in the public papers, and that it burned more coals than was required to work a 60-inch engine. "J. S." made no reply to that. I admit he was very careful over it when ill, and fed it with a spoon. I regretted his not being there when I last called, as I would have asked him for the loan of the spoon for a pattern to make a stamps-feeding spoon by.

N. ENNOR,  
Wadebridge, May 29.

TIN DRESSING—"MINE AGENT."

SIR.—From the Supplement of your last issue I find that "Mine Agent" continues to wield his very unenviable, and apparently his only weapons—abuse and empty assertion. I refer to the first paragraph of his letter. Alas for him, such missives are not only perfectly harmless—rather beneficial than otherwise—to his opponents, but they will also be found to perform their dire mission only upon himself. The "moral turpitude," however, of his attempts—yea, the "meanness of disposition in the individual himself, and his inability to deal successfully with the matter in question"—remains notwithstanding.

"Mine Agent" seems to be very anxious to justify the position he has taken in this so-called "discussion." And well he might, but he appears to be singularly unfortunate "in making out a case," or rather in his attempt to do so. He has the coolness, to use no stronger expression to imply that in his letter of the 3d inst., headed "Tin Dressing," the name of Capt. Parkyn scarcely appears. He says "It was scarcely to be expected that the name of Capt. Parkyn should have been altogether omitted from my communication." Now, let the "communication" speak. It is divided into sixteen sentences, and exhibits the name in question no less than eight times, or on an average "Mine Agent" managed to direct attention to it in every alternate period in his letter. In the name of common honesty I would ask—Does this look like an unavoidable circumstance? Does it not rather appear as if "Mine Agent" wilfully pulled Capt. Parkyn before the public as often as he could in the said "communication?"

Add to this the expressions employed, the meaning they are evidently intended to convey, the tenor and spirit of the whole, and no intelligent, honest man will deny that "Capt. Parkyn" is the appropriate heading of the letter, and not "Tin Dressing"; that the latter is only made a mere superficial mean excuse whereby to attack the former. This glaring failure is followed by another equally ruinous to the cause it was intended to serve. "Mine Agent" represents himself as the champion—more correctly, the would-be champion—of "the whole community of tin miners in Cornwall." They had been "slurred," their "mining knowledge" and their "genius" ignored, according to "Mine Agent." Now, the question arose, in his mind, who shall defend and exact redress for the injury done to the "whole community of tin miners in Cornwall?" "Mine Agent," it is unnecessary to say, himself has solved his own problem in a practical form. Self-elected, self-constituted, self-supported, and, indeed, self-everything, "Mine Agent" has "scaled" an "acme" whereon he appears first ludicrous, then pitiable, and, last of all, perhaps offensive. It is, indeed, "easy to be a braggart;" we need not go far for instances to illustrate that. "But what then?" Why, even a "Mine Agent," whilst endeavouring to hold another up to public ridicule, may unwittingly delineate his own character up to attractive colours, or, perhaps, reveal an undesirable position which he himself once occupied. "Ah! it is not so much what we think of ourselves as what others may think of us."

May 29.

PLUMBUM ALBUM.

THE NEW CENTRAL-LIFT STAMPS.

SIR.—Having occasion to call at Mr. Walker's works, in James-street, a few days since, I had an opportunity of seeing his new plan of guiding stamps, which appears to me the best arrangement yet introduced. The shanks work through stuffing boxes filled with a piece of soft cord, and oiled, and neither touch wood nor iron, so that the guides do not wear out, and the expense is very trifling compared with the quantity of grease now used. Besides, it does away with the jar when the stamp falls, and for crushing quartz for amalgamation the advantage must be great, as grease spoils the mercury. I have always esteemed Mr. Walker's plan of lifting stamps as by far the best in use, and this new arrangement for guiding them makes his apparatus as perfect as possible, and at the same time the attendant is enabled to turn a set of four stamps round in a minute. Mr. Walker informed me that he had just erected a set of stamps in the country on this plan, and they work very smoothly indeed, and give the fullest satisfaction.

A PRACTICAL ENGINEER.

THE SELF-STYLED PACIFIC MINING BUREAU.

SIR.—We note in last week's *Mining Journal* the letter of Mr. W. Avens, of the Stock Exchange, and headed "The Self-Styled Pacific Bureau." It is not our province to answer the serious charge made; it will doubtless be replied to by competent members of the Bureau in due course. All we at present consider our duty is to state that we have only very recently accepted the agency in London, and before doing so satisfied ourselves of the existence of the Bureau, the respectability of the members comprising the same, and the *bona fides* of the association.

We do not understand the motive of your correspondent, but think before he wrote the letter he might have taken steps similar to ourselves to satisfy himself that the Bureau in question is not what he represents, but a properly constituted body of highly respectable and able men, and the various comments in the leading journals will appear to confirm this opinion.

Permit us to add that whilst we retain the agency we will not, knowingly, lend ourselves to misrepresentations from any source, but endeavour to have carried out strictly that which we consider to be the object of the Bureau—the faithful reporting by competent mining authorities information respecting mineral properties submitted for examination, and thereby acting as a check upon fraudulent schemes only.

JAMES I. BENNETT AND CO.,  
General Agents of the Mining Bureau of the Pacific Coast.

71, Cornwall, London, May 28.

THE SELF-STYLED PACIFIC MINING BUREAU.

SIR.—It was quite refreshing to read the letter in your Journal of Saturday last on the above subject, signed "W. Avens." What a pity it is there are so few like him, who have the candour to come forward and expose these self-styled undertakings. The time has arrived when something ought to be done to put the public on their guard in relation to the life, character, and behaviour of these American mines which have been brought before the public, and millions of pounds paid for them, without any adequate return, and others that are now lying in ambush ready to be palmed on the credulous, either by a new mode in the shape of a title to be given by a Mining Bureau, or by the old dodge of highly manufactured and concocted reports and prospectuses, with high-sounding names suited for the London share market.

If warning the public is preaching to living and not dead men, they will for the future have nothing to do with these, to say the best of them, questionable undertakings. There are few (if any) of them that have a *bona fide* character to recommend them as safe speculations, and it is much to be regretted that at the present time "honesty in joint stock companies is at a discount," while "money got by promotion by hundreds of thousands of pounds, regardless of character, is at a premium," and gives to the promoters of the present day the American title of being "sharp fellows," with a *locus standi* in society, as it is now formed. This used not to be the case. However, it is no use arguing that point now, for since foreign schemes have been introduced into England the honour and integrity of the parties introducing them have apparently ceased to exist, and the shareholders themselves for the last five years are the best wit-

nesses of the truth of these statements. I trust the influence of your Journal will stop the Bureau, and any other combination, from proving in the future dangerous misleaders to the public.

Peckham, S.E.

A CONSTANT READER.

THE COSTA RICA GOLD MINING COMPANY.

SIR.—I have observed in the *Mining Journal* of March 29, and previous papers, mention of the Costa Rica Gold Mining Company's property. I have been through the mining districts in the Costa Rica Republic, and from my observations am satisfied that this company's property cannot be too highly recommended. I believe it will, under judicious management, rank amongst the best paying mines.

There are properties in the Corallito Monte de Aguacate that have yielded immense wealth to the Costa Ricans; in fact, many attributes their fortunes to the success of the mines worked here, but again be recovered, unless by virtue of a long tunnel, for the excavation of which a company was being formed in Costa Rica in 1868. The following may be interesting to some of your readers as to the wealth of this point, and I will here name some of the properties.

San Rafael and Menita and Los Oreamunos Mines are situated in the high hilly land of the Corallito Monte de Aguacate, embracing the main road from the Puentarenas to San José, the capital, and distant from each about nine leagues. Los Oreamunos extends over half mile in length on the line of the lode, and San Rafael 2*mi.* These mines were discovered in 1852, and yielded in the first very short period of their being worked \$1,500,000 in gold, but the little intelligence practised in the subterranean works developed, and the abundant and very heavy falls of rain, were the cause of drowning the mine, particularly at a point where gold quartz was being realised worth from \$2000 to \$3000 per ton, according to the most authentic information. The mine consequently became abandoned, with the exception of a very limited superficial excavation, resulting extremely satisfactorily. In the year 1861 a company was formed, consisting of a few capitalists of the country, to resume the workings; but discord entering in between them, the company was dissolved without effecting anything.

In 1863 another company was formed for working the Menita, a neighbouring lode crossing the Oreamunos and San Rafael, this company continued working, and, according to plans made in 1863, the adit or drain level gained a depth beyond the winze flooded in Los Oreamunos of 75 English feet, and the breasting within 90 yards of the rich ground before referred to; hence the Menita may be termed, so far, a key to the other properties. The lodes in Los Oreamunos and San Rafael generally run parallel, from 1 to 2 yards apart, occasionally forming a junction; the bearing is N.W. and S.E., from 5*ft.* to 6 feet wide, composed principally of felspar, blende, iron, copper (sulphure), and auriferous quartz, yielding in the aggregate \$20 to \$30 per ton; it is sufficiently common to discover a yield of from \$4000 to \$5000 per ton in conformity with the results achieved prior to its being flooded. It has even reached \$28,000 per ton in the rich vein. The mines stand about 2500 feet above the Pacific, and the climate is excellent. There is a cart-road for transporting machinery and material of any size throughout the year.

The copper and iron sulphurates in these lodes will undoubtably, after concentration, be found rich in gold; and as they will, probably, be treated in that country, owing to want of facilities, should be saved and shipped to Swansea for treatment. Native labour is cheap, and can be readily obtained at from \$6 to \$8 per month, with board. It will be necessary for a company operating extensively to send out a few good Cornish timbermen, as the ground is easy for working. Natives can do it on contract, with timbermen to keep the ground secure.

JAS. WHITE,  
San Francisco, California, May 12.

English Mining Engineer.

MR. ENNOR'S REMARKS ON MINING IN WALES.

SIR.—It would appear to me that whoever is instructing Mr. Ennor on this subject is as ignorant of it as he himself must be. Indeed, there never was a greater inaccuracy than the following which appeared in his letter of the 20th inst., and I defy him to prove his statement. He says—"I have lived long enough to discover that if I report on one mine out of ten in Cornwall as having a fair chance to become a paying one it is over the mark. Only one in 40 pay in Devon, and not one in 50 in North Wales, in the so much vaunted Cardigan district."

From this we should, first, fancy that Cardiganshire is in North Wales; it happens, however, that it is one of the southern counties of the Principality. Secondly, we should be led to judge that he has inspected at least 50 mines in this district, which is a greater number than are working in the county. It would be folly to attempt to refute his statement further, as the dividend mines speak for themselves; and it is solely for contradicting a complete tissue of untruths which Mr. Ennor has written, and which appeared in the *Journal*, that I am induced to write you, knowing that for the sake of justice, as well as for the wish on your part, that true statements only should be published by you, that I send you this—and which, if allowed to go uncontradicted, might possibly have a tendency with some parties of doing this county injury; or, at all events, prejudice capitalists from investing, as they otherwise would.

Perhaps Mr. Ennor will favour us with the list of 50 mines inspected by him in this district, all of which must be blanks, as he says not one out of 50 pay in the district.

ABRAHAM FRANCIS,  
Goginan, Aberystwith, May 27.

LEGITIMATE MINING ENTERPRISE.

SIR.—It is a well-known fact to men practically acquainted with mining operations that the immense failures in the so-called mining investments (or rather speculations) are the result of embarking in very old and exhausted mines, such as appear in the columns of the *Journal* from time to time. For example, after certain explorations are carried on, probably, for years a rich mine, or deposit, of some mineral is discovered; a rush immediately takes place, and worthless old sets are taken up and reports, embodied in prospectuses, of wonderful returns having been made, and immense profits realised, whilst nothing of the kind, in many instances, ever occurred. This happens for a time in the district the discovery is made. New names are given to float the enterprise, immense premiums are charged for such property, in too many instances the scheme is of little or no commercial value, and recent events prove that ten times the amount realised honestly out of one rich mine is lost in the ten failures! If, for example, one out of ten mines of Devon started in Cornwall only pay, one out of every forty in Devonshire, and not one out of fifty in Cardigan make any profitable returns. None of the metallic mines in Merionethshire and Carmarthenshire has ever paid anything in the shape of dividends, as the result of many things will shortly prove.

Capitalists should invest in undertakings most likely to pay them. According to recent accounts there are 100 coal mines in two counties in Great Britain now paying a profit on the working capital of 100,000*l.* each annually, and from every prospect likely to continue to do so. Compare these home investments with such as the British public has so eagerly rushed into of late years in the Great Pacific, and other similar undertakings, to their utter ruin, as statement after statement weekly appearing in the *Journal* testify. The result is that a most severe panic is now existing in the share market, consequently the most valuable discoveries of late are taken no notice of whatever, a proof that the public mind has been poisoned to an enormous extent. We are told that a rash man is sure to repent if he possess any wisdom whatever. He that maketh haste to become rich shall suddenly become poor. There must be something fearfully unpleasant looming, at no very distant period, for many when some of the most flattering bubbles burst.

A. BENNETT.

PROFESSIONAL REPORTERS OF MINES.

SIR.—In the Supplement to your valuable *Journal* of May 17, Mr. R. Symons confesses the survey of some "professional." What does he of a man surveying a large royalty from the back door of an inn "through his glass," the royalty being fully four miles off, and full five miles from the spot where the survey to be seen? Professional's hotel bills in the teens of pounds, and surveying bills

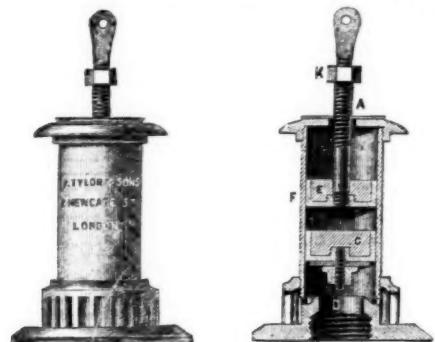
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## INSTITUTION OF CIVIL ENGINEERS.

The annual Conversazione of the President of the Institution Civil Engineers was again held in the picture galleries of the Exhibition building, South Kensington; and, to judge from the extent to which both the galleries and the machinery court were filled, the invitations given by Mr. Hawksley (the President) and Mrs. Hawksley must have been very numerous. The inventions shown, although not numerous, were very interesting, and appeared to attract much attention, the fact of the machinery and processes being shown in full operation adding materially to the pleasure derivable from the inspection of them. The patent sand-blast process is probably entitled to most prominent notice, because it was, perhaps, as much appreciated by the ladies as the macaroni manufacture, and also processes of much scientific interest. It was explained that the main object of the inventor of this process was to engrave ornamental and other devices upon plain and coloured glass, upon stone, and upon metallic surfaces, in an expeditious and economical manner, and with a sharpness which is unattainable by any other means. The invention, which applies chiefly to intaglio and relief engraving, is based on the fact that when glass, stone, or metal is subjected to the impact of a blast of sand, or equivalent hard granular substance, the detrition of the surface exposed to its action will be rapidly effected. Many pieces of glass were operated upon in the course of the evening, and the results were, without exception, satisfactory. As the sand-blast does not act upon India-rubber, wax, paper, or similar soft and elastic materials, advantage is taken of this fact to imitate on the glass the most beautiful embossed designs. When stone, wood, or metal are ornamented by this means the effect is excellent. The delicacy of the process will be best understood from the fact that a piece of lace spread over and cemented to a sheet of glass will so effectually protect the glass when exposed to the sand-blast that the threads of the network will, after a few seconds exposure, be imitated on the glass by bright interlacing lines, while the rest of the glass surface will be reduced to a ground or frosted state. The efficacy of the blast depends upon its velocity. The sand may be propelled either by steam, water, or air, but steam is in general preferred where high velocities are required. When a large quantity of material is to be removed, as in the ornamenting of stone, a steam jet of from 60 to 80 lbs. pressure is used. In this case the stencil is made of iron or rubber; but when a small quantity of material is to be worn away, or the surface merely depolished, as in ornamenting glass, a jet of air of from 140 to 150 lbs. pressure is preferred. With a low pressure, soft and delicate substances, such as paper designs, lace, leaves, &c., cemented on glass, may be used. With a steam jet using two-horse power of steam at 70 lbs. pressure, and one pint of sand, two cubic inches of granite, four cubic inches of marble, or ten cubic inches of sandstone, may be cut away per minute. It will be obvious that flat or curved surfaces may be alike acted on by this process, the blast being in all cases directed to the detrition of the surface. But to the readers of the *Mining Journal* the greatest interest will be felt in the proposed application of the sand-blast for cutting grooves in tunnels and quarries, for dressing stone, cutting stone in lathes, cleaning scale from metals, &c.; and it would be very desirable that the result of its use for these purposes should be made known.

But perhaps the most ingenious contrivance exhibited was the patent "waste-not" valve, manufactured and shown by Messrs. J. Tylor and Sons, the celebrated brassfounders of Newgate-street, which stands exactly opposite the sand-blast machine. The invention is, we believe, due to Mr. Alfred Tylor; and, whilst it works to perfection, it is unsurpassed in simplicity by anything that we have seen. The essential feature of the invention is the lifting of a free piston valve by another piston; and, as both are always under water, tight packing becomes unnecessary, and friction being reduced to the minimum, the valves appear quite unlikely to get out of order easily, and will be very durable. Supposing the valve shown in the diagram is placed in a cistern, and intended to supply a water-closet, it would, in the case of a slate cistern, be fixed with a screw and fly-nut, or in case of lead cisterns by simply soldering,



the screw and fly-nut being dispensed with. To the upper end of the piston-rod the ball lever is attached in the usual manner. Upon the ball lever being pulled up the piston, E, is raised in the cylinder, F, and the suction draws up the plug or free piston-valve, C. The water now rushes in from the outside, and descends through the channel, D, until valve C has had time to descend on to seat and cut off the communication between the water in the cistern and the outlet pipe. In like manner the valve, E, descends to its normal position, ready to be again put into action. The cost of the valve as shown, which lets about 2 gallons of water run each time the plug is lifted, is 15s., so that the price would not prevent its general adoption. The quantity of water passed each time the plug is lifted can be lessened by screwing down the nut, K, on the piston-rod, A. It will be seen that the valve is extremely simple, cannot be left running and closed of itself; it is in strict conformity with the Metropolis Water Act, 1871, and is allowed to be fixed by the New River, East London, and other water companies, and will, doubtless, give satisfaction to all who use it.

In one of the picture galleries was a model of Messrs. Carr and Barlow's Automatic Block System of Signalling for Railways. The invention is an improvement on the old block, which they consider to be open to two grave objections—that in thick weather there is the danger that the drivers may fail to see the line signal in time to prevent a collision, and that the annual cost in wages is large. To provide against the danger of the driver failing to see the line signal in thick weather the platelayers and others are called into requisition, and are stationed at intervals within sight of the line signals and of each other. These men are provided with explosive fog signals, which are placed on the rails and explode when an engine passes over them. So that in thick fog, which are known to be the most dangerous conditions under which railway traffic can be carried on, the line signals are no longer available, and the only means of communication from the line to the driver is the very primitive and rough measure of local explosions of gunpowder, the management of which has to be entrusted to men not regularly employed in signalling, but whose services are temporarily employed in the emergency. By making the system automatic the number of men necessary is of course reduced. The new block system is worked by electrical apparatus, and is to this extent similar to the old block system; but instead of using line signals placed upon the railway, having large arms or discs worked by men, the signal is placed upon the engine so that no fog can prevent the driver from seeing it, and is worked automatically, whether the engine is at rest or in motion. The apparatus is so arranged that the signal "stop" is exhibited upon the engine of an approaching train when it arrives at the commencement of a "block," so long as the preceding train is anywhere within it; but when the preceding train has passed out, and has reached a fixed point in the next "block," the signal "go on" is exhibited. There have been attempts to make the line signals work automatically, which have failed in consequence of the size

and weight of the signal to be moved, but by placing the signal on the engine itself, close to the driver, a small signal, about the same size as the steam-gauge can be employed, and rendered as certain in its action as the electrical apparatus now in use. In connection with each length, or "block," is an indicating and control instrument. The indicator shows at any time whether there is a train in the length or not; and by the control instrument the stationmaster, or other authorised person can at any time transmit either signal "stop" or "go on" to the driver on the engine. The signal is so made that if from any cause a derangement should take place the necessary consequence of such derangement would be that a signal to "stop" would be given to the driver. This arrangement, while it ensures perfect safety, compels attention on the part of those whose duty it is to keep the apparatus in working order.

The many other inventions, although of much general interest, do not call for special mention, being less directly connected with matters in which the readers of the *Journal* are generally interested. The conversazione was altogether a very enjoyable one.

## THE SOUTH MIDLAND ENGINEERS, AND COLLIERIES WINDING-ENGINES.

At the South Midland Mining, Civil, and Mechanical Engineers' meeting at the Institute, Wolverhampton, on Monday (Mr. E. JONES, president, in the chair), there were present—Messrs. W. Glennie, D. Bickley, T. Claridge, S. Watkins, J. Tatlow, W. Underwood, B. P. Walker, J. Hodgkiss, J. Laxton, I. Nayler, D. W. Lees (secretary), and others. The discussion was upon a paper on Colliery Winding-Engines, read at the previous meeting by Mr. Watkins. The author, advertising to a request made by the Institute, said that, as he had expected, he had experienced great difficulty in getting statistics showing the durability of horizontal and beam engines respectively. Everything depended on the make of the engine, the get-up, and so forth; but the tendency to wear the cylinders oval in horizontal engines was inappreciable, especially where the piston-rod was carried through the stuffing-box at the back, a method he should recommend in all engines beyond those of 12 lb. and 14 lb. pressure. A further advantage of the horizontal over the beam, or direct-acting, engine was the ease with which in horizontal engines the pistons could be got out. The whole machinery being upon the ground, the back could be reached, and the piston slid out on the cylinders.

The PRESIDENT enquired upon what portion of the machinery the engineers would place the break-power required by the Act of Parliament?—Mr. WATKINS recommended that it should be placed upon the winding-drum where there was second motion, and that the brake in that place should be supplemented by one upon the gear-wheel also.—The PRESIDENT explained that he put the question because the same interrogatory had been made by the Mines Inspector of his district (Shropshire) to all the mining engineers who had just come up for examination. They had all pressed the same views as those which Mr. Watkins had now enumerated. Inasmuch, therefore, as the mining engineers were supposed to have control over the mechanical arrangements, their reply would necessitate the application of brakes to drums, with a supplementary brake upon gear-wheels, where they had not as yet been applied; and he might state that throughout his district these arrangements were being carried out.—Mr. GLENNIE thought that it was usual for the Inspectors themselves to point out where they wished the brake to be placed.—The SECRETARY showed that the requirements of the Act of Parliament was an "adequate" brake. This left it with the mining engineers to determine where they should put the brake. A brake upon the fly-wheel of an engine having second motion would not be an adequate brake.—With this view the Institute concurred, and Mr. FENY pointed out that almost all the colliery winding engines had, in addition to the brake upon the drum, one also upon the fly-wheel, which could be worked by the foot of the engineer as he stood at the gearing.

Mr. THOMAS CLARIDGE, one of the projectors of the Phoenix Works, then submitted some valuable facts relative to the working of engines, the result mostly of 30 years' practical observation. Mr. Claridge strongly advocated horizontal in preference to beam engines, and said that he would rather lay down horizontal than beam engines, and do it from 15 to 20 per cent. less cost. He preferred for the foundation concrete and bricks and mortar, rather than stone, and said that inquiries he had just made throughout Lancashire led to the conclusion that first-class collieries were all adopting the horizontal shape. The speaker, taking up the question of alleged greater wear of the cylinders in horizontal engines, showed, as the result of his own careful enquiry, that the wear was due to the extent of the angular action of the connecting rod on the piston head.—Mr. TATLOW and others joined in the discussion, and Mr. GLENNIE and Mr. B. P. WALKER supplied data upon the result of rapid motions.—Mr. WALKER induced an instance of shafting that was kept in rapid motion at his works more admirably, and showed less signs of decay, than shafting run at a slow pace in other instances of which he had knowledge.—Mr. CLARIDGE, again quoting the result of his enquiries in the past few days throughout the great ironworks in Lancashire and the North of England, brought forward illustrations of the enormous cost at which rapid speeds were being there maintained. Mr. Claridge submitted that the cost was altogether disproportionate to the little advantage which it secured. Mr. Claridge was specially thanked by the Institute for the information he had rendered.

The attention of the members was directed to a number of blast-cartridges, to meet the requirements of the Government regulations, that had been forwarded by Messrs. Kynoch and Co., of Birmingham, and the PRESIDENT informed the Institute that it had been found recently by the limestone miners upon the Lilleshall estate; that in blasting any holes of considerable depth it was not requisite to do that which had hitherto been regarded as absolutely necessary—unite a number of straws, so as to bring the fire into direct communication with the charge to be exploded. A short straw ignited at the entrance of the drilled hole would of itself explode the powder.

## VISIT TO THE CANNOCK CHASE COAL FIELD BY THE DUDLEY INSTITUTE OF MINING ENGINEERS.

The members and friends of this flourishing and useful institution, to the number of 150, visited the new and important coal field of Cannock Chase on Monday. Among the party were Mr. W. Blakemore (president), and Messrs. W. North, Minton, Cooksey, Parkes, Lawley, Fellows, Parton, Field, Cooper, Spruce, Latham, Gethings, Brettell, Morrison, Williams, Hartill, Rhodes, and H. Johnson, jun. Leaving Walsall in breaks, the party proceeded first via Bloxwich and Wyrley to Cannock, passing en route the Birchill's Ironworks, the new sinking and plant of Mr. T. Checkley, on the Black Horse Estate; the new sinking at Newtown, where coal has been found at a depth of 80 yards; and the famous edge-tool works and collieries of Messrs. Gilpin, at Churchbridge. A little to the right was seen the new plant of the Cannock and Leacroft Colliery Company, on whose estate of 300 acres a valuable seam of 4-ft. coal has just been discovered. After a short halt at Cannock—a quaint country town, which by the influence of mining enterprise in the neighbourhood is fast being transformed into a populous "centre," the company proceeded to the Huntington Estate to inspect the bore-hole of the Cannock and Huntington Colliery Company. This boring has been prosecuted to a depth of 86 yards through red marl, the bunter conglomerates, and white rock. As in other parts of this coal field, a considerable body of water was found in the pebble beds, but by the new method of casing, or "tubbing" adopted by the Cannock and Rugeley, the Fairoak, and other companies, this will be dealt with without any difficulty. Mr. North explained that the directors of the Cannock and Huntington Company had entered into an agreement with the Diamond Rock-Boring Company, by which the latter undertake to bore by their patent process to a depth of 200 yards, and to complete the work within three months. By this boring much valuable evidence will be afforded as to the existence, or otherwise, of coal underlying the whole district between the South Staffordshire and Shropshire fields.

The party next proceeded for about three miles along a shingle road, across one of the wildest portions of the Chase, to the trial sinking at Fairoak. This sinking has reached a depth of 120 yards, the coal measures having been struck at a depth of 97 yards. In the progress of the sinking a number of coarse grits and boulders, similar to those found in the upper coal measures in Leicestershire, North Staffordshire, and Lutterworth, have been come upon. Some large blocks which present unmistakeable evidence of ice action, and which are undoubtedly what Ramsay calls "travelled rocks," were found at the base of the gravels. Of these some are 2 tons weight, and contain traces of copper and lead, the latter being freely disseminated. Some specimens of lead ore contained 35 per cent. of metal. Malachites, identical with those at Burra Burra, in Australia, have been found here in such quantities that the roads around the colliery are paved with them. Whatever may be the financial results of this enterprise, its scientific value will be very considerable, as shedding new light upon many interesting and unsolved problems. Mr. W. Molyneux, F.G.S., one of the promoters of the undertaking, will read a paper on the "travelled rocks" referred to at the next meeting of the British Association. The Fairoak Company have secured 5500 acres, of which 20 acres is set apart as building land, with the view of establishing a mining colony close to the pits. The shaft is round, and 15 ft. in the clear. To a depth of 79 yards it is cased with cast-metal tubing, owing to the water found in the bunter pebbles. Mr. W. Molyneux, and Mr. J. Moore (managing director), received the visitors with the greatest courtesy.

The new plant of the Cannock and Rugeley Colliery Company was next visited. The shafts are 15 ft. diameter in the clear. The "tubbing" is 1½ in. thick, 11 segments to one round, and each segment 2 ft. deep. The shafts are 80 yards deep, and it is expected that coal will be found at a total depth of 380 yards. Nearly the whole volume of water (2400 gallons per minute) has been successfully tubbed back, leaving only about 35 gallons per minute to be dealt with by the pumps. The tubing is carried to the "Old Man's" coal, and continued beneath the seam. The new winding-engine, which is in course of erection, will include two pairs of 32-inch cylinders, and 16-ft. drums. The makers are Messrs. Thornewell and Warham, of Burton. The pair of engines are 300-horse power.

A special train on the private railway of the company afterwards conveyed the party to the famous old plant of the Cannock and Rugeley Colliery Company, where Mr. Williamson, the manager, was waiting to receive them. The depth here to the shallow coal is 180 yards, and to the deep coal 200 yards. The distance from the shaft to the working face is in some parts as much as 1600 yards. Underground haulage is done over a distance of 1200 yards by the tail-rope system. In some districts of the pit the engine haulage-roads are through the "goh." The electric telegraph system of signalling is in use at this colliery, and is found to work admirably. The plant consists of a pair of 26-in. cylinders to the shallow coal, and a pair of 36-in. ditto to the deep coal, with nine boilers, of which eight are cylindrical. The pumping-engine has a lift of 87 yards, but it is Mr. Williamson's intention shortly to substitute a ram for the lift. Much interest was shown in the self-acting gates which secure the shaft, and which are worked by a very ingenious apparatus, the invention of Mr. Williamson. It was also noticed that Omerod's disengaging hook, which effectually prevents over-winding, was in use at this colliery. A new 16-ft. shaft, for the purpose of ventilation, is being sunk at this colliery. There are 450 men employed in the deep and 380 in the shallow seams. The liability of these colliers to accident is, by the perfect nature of the plant and appliances, reduced to a minimum. Arrangements are being made for the introduction of coal-cutting machinery, and a large ventilating fan will shortly be put into operation.

ENGLISH EXHIBITORS AT VIENNA.—Messrs. Whitley Partners, of Leeds, anticipate that they will have the most extensive collection of improved mechanical inventions in the Exhibition. Their machinery is all of a special character, of the very best quality of workmanship, by well-known houses, designed either by or for them, and so constructed as to turn out large quantities of one class of work. The system adopted in their establishment is such that nearly all the specialities that they manufacture are sub-divided into classes, and the respective parts of each speciality made interchangeable, and from foundry to fitting shops this system is adopted wherever possible. The PRET VALVE will receive the prominence so justly deserves, and will be represented by an assortment from ½ inch bore to 17 inches, the largest valves being extensively used in connection with the conduit pipes of water and gas works. This valve, having two independent discs closing the aperture, gives it not only twice the durability of the ordinary valve, but also a double guarantee against grit or sediment passing with the current of water, or steam interfering with the proper closing of the valve. The ALLEN GOVERNOR for steam engines, which, although only recently introduced into this country, has already been largely adopted for ironworks, cotton mills, paper manufactories, wire mills, &c., where the engine is subjected to great variations of load, whilst a uniform speed of the machinery is absolutely necessary. So sensitive is this steam-engine governor that, in the case of cotton and spinning mills, the weight of the yarn produced is affected by the governor, whilst in steel or iron rolling an increased load of 400 or 500 horse power can be instantly thrown on the engine, without an alteration of speed or injurious strain on the machinery. The principle of this governor may be briefly described as follows:—A wheel-like wheel revolves inside a drum or cylinder, having internal ribs or projections in its interior. This cylinder is filled with oil, and the paddle is driven by the engine at a high velocity, so that the centrifugal force imparted to the oil has a powerful tendency to carry the cylinder round with it; but this tendency is resisted by a valve, having a chain passing over it, to which are attached certain weights. The ordinates of this curve are so arranged as to exactly balance the increasing momentum of the oil cylinder, and this motion is transferred directly to the equilibrium valve of the governor, by means of a sector and pinion. An interesting paper on this governor was read at the meeting of the Institute of Mechanical Engineers, held in London, May 1, when the subject was treated in a very exhaustive manner.

HANSON'S PATENT EXPANSION GEAR FOR STEAM ENGINES is also shown in model, in a sectional model, will, no doubt, also command considerable attention for its originality, and the careful combination of principles required in the successful adaptation of high and low pressure steam, whilst the automatic valve motion of both cylinders renders it particularly suitable and economical in the case of pumping-engines, or engines running at a high piston speed. The high-pressure cylinder works inside the low-pressure one, on a stationary piston, securing a perfect system of steam jacking, whilst a high temperature is maintained in the low-pressure cylinder. Its ends or covers thus become the piston of the exterior or low-pressure cylinder, both pairs of valves being worked by the steam, giving a sharp cut-off. It is maintained for this engine, when combined with the pump, that it will do twice the work with the same quantity of steam, of any other direct-acting crank steam-pump in the market; and when applied to crank engines, whether marine portable or stationary, another immense advantage is that the thrust is equally maintained almost throughout the entire stroke. GLOVER'S AND HANSON'S PATENT SELF-ACTING REDUCING VALVE is another of Messrs. Whitley Partners' specialities. The object of this valve is to supply a certain uniform pressure of steam, or an equivalent temperature from the high-pressure steam in boilers, for the various processes required in calico printing, dye works, oil and soap works, refineries, breweries, &c. The required pressure is accurately given off at the outlet, and is regulated by means of a column of mercury. The valve may be said to be entirely frictionless, and is, therefore, extremely sensitive. A large number are in use, and have proved themselves superior to anything produced for this purpose. FIELD AND COTTON'S DIRECT EXPANSION COMPOUND ENGINE, illustrated by means of a sectional model, will, no doubt, also command considerable attention for its originality, and the careful combination of principles required in the successful adaptation of high and low pressure steam, whilst the automatic valve motion of both cylinders renders it particularly suitable and economical in the case of pumping-engines, or engines running at a high piston speed. The high-pressure cylinder works inside the low-pressure one, on a stationary piston, securing a perfect system of steam jacking, whilst a high temperature is maintained in the low-pressure cylinder. Its ends or covers thus become the piston of the exterior or low-pressure cylinder, both pairs of valves being worked by the steam, giving a sharp cut-off. It is maintained for this engine, when combined with the pump, that it will do twice the work with the same quantity of steam, of any other direct-acting crank steam-pump in the market; and when applied to crank engines, whether marine portable or stationary, another immense advantage is that the thrust is equally maintained almost throughout the entire stroke.

WATER'S SELF-ACTING REDUCING VALVE is another of Messrs. Whitley Partners' specialities. The object of this valve is to supply a certain uniform pressure of steam, or an equivalent temperature from the high-pressure steam in boilers, for the various processes required in calico printing, dye works, oil and soap works, refineries, breweries, &c. The required pressure is accurately given off at the outlet, and is regulated by means of a column of mercury. The valve may be said to be entirely frictionless, and is, therefore, extremely sensitive. A large number are in use, and have proved themselves superior to anything produced for this purpose. FIELD'S DISC LIP VALVE consists of two rubber concave discs, the edges or lips being compressed together by a brass cage. These valves are extensively used in fire-engines, and for pumping water and other liquids. They are entirely unaffected by the nature of the water; sand, mud, or gravel passing through them does not injure or impair their efficiency in the least. Their elasticity prevents any concussion in the pump, even at high velocities. COMMON'S AUTOMATIC APPARATUS FOR THE PROTECTION OF WATER-PIPES FROM THE ACTION OF FROST is another contrivance likely to attract attention; it is designed to prevent the bursting either by emptying the pipe or by allowing a fine stream of water to pass through them as is most convenient, only when the frost is sufficiently severe to endanger them. The action is caused by the motion produced by the freezing and expansion of a small body of water contained in a properly formed closed thin copper vessel, with which is connected a suitable valve. In times of frost this valve is opened, and allows a fine stream of water to pass through the pipe, thus causing a motion of the water, which is sufficient to prevent the pipe freezing in nearly every case of frost, and the consequent inconvenience of water, and to prevent, in all cases, the bursting of the pipes. WATERS'S FEED WATER HEATER is very highly spoken of by American users, though it does not seem to be yet largely known in Great Britain. It is claimed that it furnishes the boiler with a full and steady supply of thoroughly heated water, raised to the boiling point (212°) by means of the exhaust steam, without creating any back pressure on the engine. It keeps the boiler free from incrustation and sediment, as fine water, and all other impurities contained in the water that can form scale or sediment are separated from it and retained in the heater, leaving the water soft and pure as it enters the boiler, and saves from 15 to 25 per cent. of fuel. CHANDLER'S PATENT COMPOUND LEVER BALL VALVE is an effective contrivance for regulating the level in water cisterns or boiler supplies. The defects of the old form of ball valves are entirely removed. They will resist a pressure of 1000 feet head of water. The entire of Messrs. Whitley Partners' exhibits represent no less than 43 distinct mechanical contrivances, but those already referred to will suffice to indicate the general character of the inventions shown.

MAY 31, 1873.]

## SUPPLEMENT TO THE MINING JOURNAL.

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## Meetings of Public Companies.

## DEVON GREAT CONSOLS COMPANY.

The ordinary general half-yearly meeting of shareholders was held at the company's offices, Gresham House, on Tuesday,

Mr. W. A. THOMAS in the chair.

Mr. ALLEN (the secretary) read the notice convening the meeting. The CHAIRMAN remarked that he had but little to say in submitting the directors' report, for he regretted that they were unable to offer them the same congratulations as they had been accustomed to. Their affairs were not so prosperous for the moment as they had been for some time past, but they all trusted that the adverse circumstances were of a temporary character only. He would at once read them the directors' report, the financial statement being already in their hands. From these they would see that much exploratory outlay had been made, and still that all payments had been made out of profits. The directors had not found it necessary to make any call, and their 5000*l.* worth of Exchequer Bills, which constituted their reserve fund, was still intact. He concluded by reading the subjoined report of the directors:

In conformity with the Articles of Association of the Devon Great Consols Company (Limited), the directors have caused a copy of the statement of receipts and expenditure, and a balance sheet of the property and liability of the company, to be sent to each member.

It will be observed that there are seven months' mine costs charged, and the proceeds of six sales of ore only credited on a half-yearly account; this arises from the weeks intended on the first Saturday in each calendar month, as formerly, the sales of ore remaining the same—12 times in the year.

The extensive preliminary works for the further development of the mines, the expectation of meeting with courses of tin, have necessarily demanded a heavy expenditure. The directors regret to report that no assistance has been received from the Duke of Bedford, as anticipated, by a rate of dues, to which they are still of opinion the company is fairly entitled. His Grace's agent, unfortunately, does not put this interpretation to the directors upon a certain clause in the Memorandum of April 15, 1872, specifying the work to be accomplished, so as to entitle the company to the rebate in question. The directors, however, maintain that the preliminary works absolutely necessary before the operations of driving and sinking could be commenced, without which it was impossible to do more (mechanically) than has been done in driving and sinking, is clearly within the meaning of the exception named in the Memorandum, and consequently the company is entitled to the benefit of such exception. The correspondence on the subject lies on the table, and is open to the inspection of members.

Although the available balance of cash, so greatly reduced since the last meeting, cannot be regarded otherwise than unsatisfactory, it must be admitted that the vigorous prosecution of exploratory works has caused a considerable outlay, which the audited directors at the last meeting, without having recourse either to a call or the 5000*l.* Exchequer Bills, which remain intact.

It cannot be denied but that the high price of materials, the difficulty of obtaining specially skilled labour, and the very low price of copper ore, have operated most prejudicially against the success of the concern; nevertheless, the directors are encouraged to entertain the sanguine expectation that by perseverance the object of this company will be ultimately attained—the discovery of rich courses of ore in depth.

It will be seen in the balance-sheet of property and assets, and capital and liabilities, that the company possesses a good stock of materials for the future prosecution of the mines, and that the general efficiency and value of the machinery are fully maintained.

The discovery of ore during the last six months has exceeded the samplings, and it is estimated there are 22,000 tons in and about the mines still available in due course of working, which, after sampling 6331 tons, is an important feature, showing the existing productiveness of the lodes. The arsenic works are in full operation, producing from 150 to 200 tons per month, with an abundant supply of arsenic manure for use.

The directors have learnt with extreme concern and dismay the great fall that took place in the standard for copper at the sale at Truro on Thursday last, when 10*l.* per ton, or were offered by this company, and realised nearly 1000*l.* less in the account of assets. This extraordinary depreciation in the value of the ore is attributable to the unsatisfactory relations existing between the smelters and some of their workmen. As it is probable, therefore, that the standard may not materially improve until the question in dispute shall be satisfactorily adjusted, it becomes a matter for deep consideration whether it would not be advisable for this company not to sample any more ore until a more remunerative price can be obtained. Such a course would doubtless operate adversely for a time on the company's finances; it must at the same time be remembered the ores would remain in stock ready to be brought forward whenever there is a better market for them.

A report on the mines has been drawn up by the principal agent, and will be submitted to this meeting.

In accordance with the Articles of Association, all the directors retire from office, and being eligible offer themselves for re-election. No other application for the office of director has been duly received.

J. D. Browne, Esq., and Charles Chatfield, Esq., the auditors also vacate office, and being eligible, are desirous of being re-appointed.

The statement of Receipts and Expenditure showed—RECEIPTS. Balance last account, 13,972*l.* 19*s.* 6*d.*; copper ore sold for six months ending February, 6331*l.* 5*s.* 13*d.*; arsenic sold, six months ending March, 540*l.* 1*s.* 6*d.*; timber sold, carriage of ore and other receipts, 1917*l.* 12*s.* 10*d.*—  
Expenditure—Mine cost, for seven months ending March, 21,031*l.* 13*s.* 6*d.*; dues on copper, 170*l.* 12*s.* 4*d.*; timber imported, 1593*l.* 5*s.* 8*d.*; reduction works cost, 3630*l.* 1*s.* 8*d.*; 32,71*l.* 4*s.* 1*d.*; leaving balance (being at bankers), 69*l.* 12*s.* 4*d.*; cash in the office, 14*l.* 4*s.* 5*d.*; cash at Tavistock, 20*l.* 0*s.* 0*d.*; money on call, 19*l.* 1*s.*; bills receivable, 4884*l.* 5*s.* 8*d.*; 6705*l.* 2*s.* 4*d.* The balance sheet showed—

PROPERTY AND ASSETS. Steam engines, water wheels, timber, iron, coal, and other machinery and materials—Surface. Underground. Total.

Wheat Maria	£ 4,160 3 0	£ 751 15 0	£ 4,911 18 0
Wheat Fanny	544 0 0	173 10 0	717 10 0
Wheat Anna Maria	13,236 17 3	1449 0 0	14,685 17 3
Wheat Judith	11,202 14 6	3729 4 0	14,928 18 6
Wheat Emma	6,782 0 0	2359 2 6	9,041 2 6
Wheat Thomas	110 0 0	215 5 0	325 15 0
South lode	400 0 0	80 0 0	480 0 0
Railway	6,170 0 0	0 0 0	6,170 0 0
Moresby	155 0 0	0 0 0	155 0 0
In store at the mines—iron, steel, brass, coal, powder, rope, nails, copper cables, oils, kerosene, &c.	3,020 16 6	0 0 0	3,020 16 6
Copper ore raised in March, sold 17th April, 1873	3,120 18 8	0 0 0	3,120 18 8
Copper ore raised in April, to be sold 22nd May, estimated at	2,800 0 0	0 0 0	2,800 0 0
Arsenic shipped per Puck, not received	1,095 15 2	0 0 0	1,095 15 2
Ores, haulage, precipitate and mundic, at surface, estimated (less dues) at	5,928 6 3	0 0 0	5,928 6 3
House at Abbotfield, near Tavistock	2,600 0 0	0 0 0	2,600 0 0
House at Honey's Tor	1,200 0 0	0 0 0	1,200 0 0
Celebration	1,246 5 2	0 0 0	1,246 5 2
Reduction works	5,564 5 7	0 0 0	5,564 5 7
Balance of account of receipts and expenditure	6,705 2 4	0 0 0	6,705 2 4
Carriage of ore, outstanding 30th April, 1873	58 4 10	0 0 0	58 4 10
Amount to be returned to be assessed for the year ending April, 1873	284 16 4	0 0 0	284 16 4
Office furniture	40 0 0	0 0 0	40 0 0
Exchequer bills in hand, being reserve fund, market value 30th April, 1873	5,017 2 6	0 0 0	5,017 2 6
Total	£89,987 14 7	0 0 0	£89,987 14 7

CAPITAL AND LIABILITIES. Members' capital, 10,240 shares of £5 each, of which 2*s.* per share is paid

Mines' cost for April, including merchants' bills

Reduction works, cost for April

Dues on copper ore and arsenic

Acceptance for timber per Apollo, due 8th September

Iron, had of Messrs. Lang and Co.

Ottes rent, one quarter to Lady-Day

Balance carried down

£1,024 0 0

3,300 0 0

400 0 0

1,350 0 0

850 1 4

638 17 4

33 0 0

£2,391 15 11

£89,987 14 7

MEMO.—Contracts pending for timber and staves deliverable in 1873, estimated at £7,475 0 0

The CHAIRMAN, in reply to a question from a shareholder, said that a smelter had informed him that the smelters anticipated that the strike would not last a long while. The fact was the men had demanded so large an increase that the smelters felt that they could not accede to it, and some of the more determined had decided that they would rather shut up their works altogether than pay more wages than at present, so that they might even have an intimation from the smelters that it was undesirable to send any ore to the ticketers, even if they did not themselves decide to limit the quantity offered.

A SHAREHOLDER enquired whether the directors would propose to discontinue getting the ore, or merely to stock it? The CHAIRMAN said that their principal agent thought it better to keep some parts of the mine going; but it was an important question, which would not be decided upon without mature consideration.

There were certain permanent expenses, which would continue whatever quantity of ore they were selling. Their cost averaged about 370*l.* per month, and to meet that money must be found, either by selling ore, or by making a call. They were now quite as low in cash as they ought to be, for it would never do to place them in an unsatisfactory financial position. The difference which the fall in the price of copper had made to them was indeed serious, amounting to no less than 1000*l.* on Thursday's sale. They had estimated the sale to realise 2800*l.*, instead of which they only got 1800*l.* The only question was whether they should bring the ore to a very bad market or stock it and wait for a better.

A SHAREHOLDER supposed that if the smelters' dispute continued the prices of ore would go still lower.

The CHAIRMAN thought there could be no doubt of that, but they would learn from Capt. Richards's report that his opinion is that the mine is good, but that it is difficult with the present price of copper to know what to do.

Extracts from the agents' report were then read, describing the underground operations in the mines. The reserves of ore amount to 22,617 tons, and of arsenical mundic 115 tons.

The CHAIRMAN said that they would see that the report would be regarded as a good one under any other circumstances, and he hoped that the matters which were affecting them adversely would in a short time be removed.

Capt. RICHARDS, in reply to an enquiry, stated that they were now below the 2*s.* fm. level, and were still sinking.

Mr. PETER WATSON enquired how much per fathom they were paying for the sinking?—Capt. RICHARDS said that the price varied according to the amount of work done in the month; if they got through more than 6 fms. they were to have 80*l.* per fathom, and 75*l.* per fathom if they sank less than 6 fathoms. The size of the shaft is 12 ft. by 6 ft.

Upon the proposition of Mr. PIGGOTT, seconded by Mr. NORTON, the report and accounts were unanimously received and adopted.

The CHAIRMAN remarked that the next matter before them was one upon which Mr. Morris could give them more information than he. It had been their custom to vote a certain amount for a subscription towards the education of miners' children, and, although they were not now in quite so prosperous a position, he hoped that some gentleman would be willing to move a resolution authorising the vote.

A SHAREHOLDER enquired what the Duke of Bedford would say to the stoppage of the sales of copper, and also whether Capt. Richards had any difficulty in dealing with the miners?—The CHAIRMAN presumed that the Duke would not wish the ore sent to a ruinously low market, which would be as much to his disadvantage as that of the company. —Capt. RICHARDS said they had no difficulty in dealing with the miners, but he was sorry to say they were a little scarce.

Mr. WATSON asked what the miners were getting at present?—Capt. RICHARDS said it averaged 1*s.* per week for the last six months.

Mr. WATSON thought that a very fair price.—Capt. RICHARDS remarked that that was the average for the last six months, but they were getting more now—about 25*l.* They had only increased the depth 3*s.* fms., but the sinking must be continued, as it was according to the terms of the new lease.

Mr. WATSON thought the Duke ought to give up some of the dues while they were doing the unprofitable work. He believed the dues at Tincroft were but 1*s.* 3*d.*, and it was only through Lord Roberts' liberality that the workings were continued until the present success was attained.

The CHAIRMAN said that, roughly speaking, the dues are to be 1*s.* 1*d.* for copper, and ultimately 1*s.* 2*d.* for tin. But the directors were a little aggrieved that the preliminary workings are not to be accounted work done. The directors insist that it ought to be so accounted, and the question was still open.

The resolution for voting thirty guineas to the schools was then unanimously carried; and upon the proposition of Mr. WATSON, seconded by Mr. JAGGARD, the retiring directors—Messrs. T. Morris, W. A. Thomas, John Blackwell, and Wm. Morris—were re-elected, four hundred guineas being voted to them for the past year's services.

Mr. ALLEN, in reply to a question, stated that the alteration to a limited company had not increased the number of shareholders; they had to-day 265, and had as many before the change.

Mr. WATSON enquired whether they could not get at any tin?—Capt. RICHARDS said they had selected some in the course of dressing. It turned out very well, but it was from selected stone. They had sold none, but they had about a ton on hand. The lode is 12 ft. wide at the 23*s.*, and the footwall is the leading part. They will get out of the very hard ground in about two months.—Mr. WATSON remarked that the price of tin was very good at present. He knew that in 1859 and 1861 Drake Walls tin sold as low as 36*l.* per ton, and the very same tin would now be 35*l.*

Messrs. Deane Browne, and C. Chatfield were then re-elected auditors, and their remuneration fixed at 40 guineas, and the proceedings terminated with the usual vote of thanks to the chairman and directors, and a vote of thanks to Mr. Allen and Capt. Richards for their strict attention to the interests of the company. The meeting then separated.

## GEM TIN MINING COMPANY.

A general meeting of shareholders was held at the offices, Bucklersbury, May 20.—Mr. THOMAS FRY in the chair.

The SECRETARY having read the notice convening the meeting, the directors' report, together with the auditor's balance sheet of the company, were taken as read.—The CHAIRMAN, after a few remarks, moved the adoption of the report and accounts, which, after considerable discussion and explanations from the directors, were received.—Several shareholders asked for explanations as to the prospects of the company.—Mr. CHIPER, one of the former proprietors of the mine, answered, and referred to Capt. Unsworth's report, and also stated his firm conviction that in a short time the mine would turn out well.

The CHAIRMAN having referred to the captain's report, and to the proposed expenditure to further open the mine, stated to do this more shares must be placed.

Mr. CHIPER stated that before he left Tavistock the lord of the sett had sent Capt. John Goldsworthy to inspect and report him.

Capt. J. Goldsworthy's report upon the various points of operation, and which was considered favourable, was read:

May 19.—I have this day, agreeable to your instructions, inspected the above-named mining property. The following is my report:—The cross-cut has been extended north 16 fathoms to the south lode in deep adit level, and extended west from cross-cut, on the course of the lode, 5 fathoms; the lode being of good size, from 3 to 4 feet wide, which has been stopped away. The adit level has been extended east on the course of the lode from cross-cut 87 fathoms; the lode in many places proved productive, and has been worked up to the old men's workings, showing the same to be a tin-bearing lode. The lode in the present end is in a disordered state. There is a pitch working in the back on tribute, at 15*s.* in 1*s.*; tribute standard 50*l.* per ton for tin. At the extent of the drivage on the south lode east a cross-cut has been commenced to reach the north lode; this is a point of great interest, as the intersection would be near the elvan course. Judging from the general influence of elvan courses where lodes come in contact with these changes, good results are often met with, therefore I advise this cross-cut being driven with the least delay possible; this cross-cut will reach the north lode full 50 fathoms further east than at any point explored. A cross-cut has been extended from the south lode about 30 fathoms east of winze, 9 fathoms, and intersected the north lode, which is of a good size, varying from 2 to 5 feet wide, of a masterly and healthy appearance; this lode has been opened 18 fathoms east of cross-cut, and 8 fathoms west, which has produced excellent tin, in places full 30*l.* per ton. A stope in the back is worth 25*l.* to 30*l.* per ton. The lode in the western end is 2*s.* feet wide, of a favourable description, with rich tin intermixed, and presents an improved appearance. The engine-shaft is sunk to the 32 fm. level perpendicular; at this point a cross-cut has been put out north towards the lode about 2 fathoms. The drivings after the intersection of the lode should be continued east, as at a point in the 20, about 20 fathoms east of engine-shaft, the lode is of great width, and tinny throughout for many fathoms. The cutting of this lode 12 fathoms deeper, in my opinion, will open up a lasting run of tin ground. The 32 should be extended west so as to prove the lode towards the valley; the prospects are favourable in this direction. The 20 should be extended west also to prove the lode in that direction. In the 20 east a cross-cut should be put out north, where, in my opinion, the main part of the lode is standing. In conclusion, the following work is what I recommend being done:—The driving of the adit level cross-cut north from the south lode to the north lode at the eastern point, which will intersect the lode as near the elvan course as possible. There the chances of meeting with favourable results are good, and the sinking of the winze on the north lode below the adit; this will, without doubt, open up productive ground. The adit level should be extended north to the lode, and a level should be extended east to come in under the ore ground in the 20, and also cross-cut to the lode in the 20 fm. level end. If the foregoing work be carried out there is great chance of opening up a lasting property. The stamping power and dressing department are sufficient to return a large quantity of tin from the produce of tinstuff.—J. GOLDSWORTHY.

Mr. CHIPER continued that as soon as the cross-cut to the north lode was completed much larger returns of tin would follow. Also at south lode, Capt. Goldsworthy stated that when a winze was sunk without the least doubt very productive ground would be opened, and also that as soon as the lode was cut at the bottom of the shaft (which the company have completed sinking to the 32) it will open up a lasting run of tin ground.

It was unanimously resolved at once to offer 500 shares amongst the shareholders, in proportion to their present holdings.





2s. 6d. per share, which would absorb 2147L 10s., leaving about 330L to be carried forward.

Col. CLARKE mentioned that had it not been for the drop in the price of tin a better result would have been realised.

The SECRETARY, in reply to a question, stated that the highest price obtained for the tin during the past quarter had been 89c. 10s., and the lowest price 80c. 10s. per ton. About half had been sold at the lower price, making a difference on those sales alone of about 250L.

Mr. GODDARD observed that the manager still called the lode in the shaft the north part.

The SECRETARY said they were sinking on the north part of the lode. Replying to other questions he stated that the consumption of coal had amounted to 483 tons, and the average price paid had been 27s. per ton.

A SHAREHOLDER was agreeably surprised to find that in the present condition of things the committee were in a position to recommend the usual dividend and bonus.

The SECRETARY said that about 60 tons of tin had been raised and sold, and that the cost had been comparatively lighter, the labour cost for the four weeks amounting to 56L, or 57L.; the bills amounted to 95L. Between 80 and 90 hands were employed on tutwork and tribute.

The accounts were passed and allowed, and, with the report, ordered to be entered on the minutes.

A dividend of 7s. 6d. and a bonus of 2s. 6d. per share was declared.

A vote of thanks to the Chairman and committee closed the proceedings.

#### NEW WHEAL LOVELL MINING COMPANY.

At a general meeting, held on the mine, the accounts presented by the purser, Mr. Thomas W. Field, showed a debit balance of 1275L. A call of 5s. per share was made. It was announced that the Duchy of Cornwall has consented to reduce the rate of dues for one year, from April 23, to 160th. The agent, Capt. Joseph Prisk, reported—

"Since the last meeting Kenfall's shaft has been sunk 5 fms. 2 ft., and completed to the 70 fm. level; lode 3 ft. wide, and worth 20c. per fathom. The lode here has been improving for the last 2 fms, sinking, and I deem it advisable to sink a fathom or two more before we drive, in order to have tin ground in the backs to stop after the ends are driven. The shaft is now the deepest point ever reached in the mine, and seeing the lode so regular and well defined, together with the ground moderately easy for working, I deem it the most important feature we have ever had; price for sinking 22c. per fathom. Two men are driving the 60 fm. level west at 6L per fathom. At the 60 fm. level east the lode is producing saving work, and I am from its present appearance I think it is likely to improve. The 50 fm. level has been driven east 4 fms. 2 ft.; lode 4 ft. wide, worth 25c. per fathom; this will in a short time be communitised with a winze from the 40; when I hope to increase the returns. The 30 fm. level has been driven east 5 fms.; lode small and poor. We purpose to communicate with the winze, which is down 6 fms. below the 20, where some profitable tin ground will be available—North Lode: The flat-roof shaft is sunk 3 fms. below the 30; lode 18 in. wide, producing stamping work, —Crownhill Well Lode: We have cleared and secured the shallow adit north 55 fms., but the back bottom of the level, as far as they could reach without machinery, is taken away by the ancients; and as an evidence of their having a profitable lode, I find they have brought up the second adit, which is a few fathoms deeper. We are engaged in clearing the deep adit, and hope shortly to be in a position to examine the old men's works, where I think a piling lode will be found. The improvement which has taken place in Kendall's shaft in the last month should be regarded as highly important, seeing we are now down to a moderate depth, and about the same level which has proved the turning point for the better in every principal mine in the district. Every exertion possible will be brought to bear on the sinking of the shaft; and in about four weeks I hope to be in a position to get the bottom ends going in good tin ground, which will very much increase the returns. There are employed in the mine 64 men, 11 girls, and 10 boys."

#### WHEAL MARY HUTCHINGS MINE.

Wheal Mary Hutchings is a tin mine, situated within a short distance of Plympton, and for about seven years it has been pursuing the noiseless tenor of its way with varying success, and has now reached a point which enables its agents to speak in terms of the greatest confidence of its future prospects. Fortunately, it is one of a few mines not materially affected, if at all, by the present enormous price which have to be paid for coal and machinery, the mine being worked entirely by water-power, and from the commencement of its operations in 1863 up to the present time its returns of tin have been gradually increasing. At the end of the first year 12 tons of tin were raised, realising 96L. 15s. 5d., whilst last year nearly 72 tons were sold, and the sum realised was 6175L. 15s. 7d. The dues payable on these sums have increased during the same period from 53L. 11s. 9d. to 55L. 15s. 1d., and, altogether, in seven years, there has been little short of 30,000L worth of ore raised and sold from the mine. Calls have been made to the extent of 3000L, and dividends have been paid to the amount of 2200L, and the rest of the money has been well and judiciously laid out in placing the property in a thoroughly substantial and permanent position. It will be seen from these figures that although thousands of pounds have been spent on the mine the annual cost to the shareholders up to this time has been but 800L. The tin raised has always been of the finest quality; as much as 97 per ton has been paid for it, and even in these depressed times, when almost every week witnesses a serious drop in the price of the metal, more than 80L is being paid for the ore raised and stamped on Wheal Mary Hutchings. The mine is now under the management of two thoroughly practical men—Captain Miners and Capt. Farley—and a better proof of the confidence which is felt in the future prospects of the concern cannot be had than the fact that Captain Miners himself holds just one-half of the 12,000 shares into which the mine is divided. The adventurers held their three-monthly account on the mine yesterday, and it will be seen from the report of the agents that the mine was never in a better position than at this moment. A very important improvement has taken place in the south, or Hemerton, lode during the past month, and, in the words of the managing agent, it is likely to be "the salvation" of the mine.

Mr. J. W. STEPHENS presided at the meeting which was held on Wednesday, and amongst a numerous attendance were Capt. Tom, R. N., Mr. A. Broad, the purser, Mr. H. S. Dyer, R. N., Mr. C. G. Gibson, Capt. Miners, Mr. Hambley, Mr. Semley, Captain Farley, Mr. Pearce, &c. The accounts showed a debit balance of 264L. 2s. 1d. The agents conclude their report by stating that they have great pleasure in saying that the prospects of the mine were never equal to the present, and from the gradual improvement of the lode at the shaft, together with the splendid lode in the south part of the mine, they have every prospect, with a little patient perseverance, of again entering the Dividend List.

The report and accounts were adopted, and it was resolved to make a call of 6d. per share to meet the present debit balance. The question of changing the mine from the present Cost-book System to that of a limited liability company was then considered.

The PUSHER, in introducing the subject, said there had been a feeling amongst some of the shareholders that the mine was too much hidden from the public, and that it was desirable to make it better known, and to make it a marketable mine. There was a desire to put the shares into the hands of other people, and it was thought that persons would not come in and take such an interest in a mine conducted on the Cost-book Principle as they would in a limited liability company, because the Cost-book System had been found to lead people very much astray, whereas under the other system they knew exactly what their position was. Unfortunately, it had been the case with many mines in Cornwall of late years, that the accounts had not been satisfactory under the Cost-book System—tremendous losses had been incurred, and the shareholders had afterwards been called upon to pay that for which they had no idea whatever that they were in any way liable. It was therefore, thought that a limited liability company would take more easily with intending purchasers than a mine carried on under the present system. This was the feeling which induced the suggestion that there should be a change, but since the notice calling the meeting had been issued some of the principal shareholders had reconsidered the matter; and, looking at all the existing circumstances, they were now of opinion that to make a change at present would be premature.

Capt. Tom said he was exceedingly glad to hear this, because had any such a proposal been made he should have opposed it.

The PURSER wished it to be distinctly understood that there was no desire whatever to force the matter on the shareholders, but it had merely been brought forward for their consideration, and it was entirely an open question for them. Wheal Mary Hutchings was at present conducted on very peculiar principles, for the accounts were charged up as closely as they possibly could be, and at this moment he was not aware of a single outstanding liability beyond the mere ordinary running costs of the mine. In this respect it was most exceptional mine, and was a model and a pattern to many others. At the present moment, therefore, he did not see the desirability of making any alteration in the existing system of management, excepting, perhaps, it be for the purpose of putting the mine into the market, as people would rather buy into a limited liability conducted mine than into a cost book mine.

Capt. MINERS said he had thought over the matter, with the desire to do what was best for the interests of the mine, and his own opinion was that the time was not yet ripe for the change.

It was then decided that the consideration of the question should be postponed, and after the transaction of some formal business the meeting separated.—*Western Daily Mercury.*

#### ROSSA GRANDE GOLD MINING COMPANY.

The ordinary meeting is to be held on Wednesday. The report of the directors states that sufficient ground has already been opened up in the Bahu Mine to enable ore to be raised (as soon as the stamps are ready), without impeding or overtaking the works for developing the mine in depth. The "stopping" ground laid open will, Captain Dale estimates, admit of the mine being worked at a profit, and by the time the stamps are complete there will be 12 months' ground opened out "in reserve," to maintain which the shaft and levels will be pushed on with all speed simultaneously with raising ore for produce. Although Captain Dale estimates the present capabilities of the mine at 500L. per month profit, it will of course be apparent that as the lode is opened out in depth more points can be worked at one time, and, presuming that the lode maintains its present size, a larger amount of stone should be raised, and, consequently, increased returns and profits obtained. The directors cannot but attach the highest importance to the favourable feature demonstrated by the last few months' working—that the lode in depth is improving in size, whilst it maintains its auriferous character. Capt. Dale states that he thinks the erection of the stamping machinery will go to work by about August. The Cachoeira Mine has not turned out so well as the Bahu, but the lode now being laid open can, Capt. Dale's opinion, be worked at a profit, whilst the ground met with in the 20 east fully warrants the further development of this portion of the company's property. Other portions of the estate, such as the second and third formations, where lodes of large dimensions exist, offer an excellent field for exploration at some future date, but these have been and still are of necessity in abeyance. The directors consider that they have now good grounds for congratulating the proprietors on the prospects of the company, having every reason to believe from the reports received that in a few months' returns of gold will be obtained which will enable profits to be made and maintained.

[For remainder of Meetings see to-day's Journal.]

#### FOREIGN MINES.

**SWEETLAND CREEK.**—Telegram from the superintendent, Mr. G. P. McLean:—"We have cleaned up on one side drift after a run of 46 days. The gross returns are \$10,750, the tunnel cost is \$1900, and the profit is \$8800. I send you a remittance of \$6000."

**RICHMOND CONSOLIDATED.**—Cablegram from the mine:—"Week's run, \$28,000."

**GOLD RUN HYDRAULIC.**—Telegram from Mr. O. S. Kipp, superintendent.—"After a run of 10 days we have "cleaned up" \$7100; net, \$200.—[This "net" is supposed to be after paying for sinking the new shaft and other expenses outside of the ordinary running expenses.]

O. S. Kipp, May 1: I have not cleaned up Hydraulie yet. I think now I will clean up on the 6th. I have had many unforeseen difficulties to overcome since the season opened. I could have made at least two runs since the water commenced flowing in the ditches, but I could not think of operating a hydraulic when the water would freeze in the sluices. Since I have got working regularly, and working in high bank, I have had a great deal of pipe-work to fix; it took much time to move it off. We have now got up to the main bank (120 ft. of the looking gravel), and shall continually wash so long as water lasts. The sluices look well; I have no reason to doubt a good clean up. I consider at this date all difficulties are surmounted. In relation to the shaft, there has been nothing done since reaching a depth of 90 ft. At this point the water came in so fast that the hoisting was nearly one-third water. We concluded it would be the wiser plan to have a hurdy-gurdy wheel constructed at once, and do the hoisting and pumping with water-power. By so doing it would do away with seven men's labour. I have completed a contract with a good mechanic to construct all the necessary machinery at a cost of \$450 complete. The prospect was good for hydraulic drift all the way down to 80 ft.; here the drift became much higher, and continued to improve as we went down. The miners here consider the last 4 ft. of drift worth \$500 per day with hydraulic process. This shaft has already developed your property at least ten times its first cost in valuation, and I easily believe when I get to bed rock that I shall be able to cable you very rich diggings. Everything now looks and speaks favourably for the future. Our water-power and hoisting works are to be completed and in running order by the 8th of this month. I shall drive the work ahead, and think we shall get to the bottom before 30 days thereafter.

**BUNKER HILL (California).**—W. L. Palmer, May 6: The ore in the 170 is improving in quantity and quality; we are supplying the mill chiefly from this body now. Our explorations prove that it reaches from 70 to 270, and still on beyond our developments, which are continuing successfully. Water has been increased by abundant rain, and the mill is doing well.

**UTAH (Silver-Lead).**—W. H. Rodda, May 8: At Mr. Bateman's request, I write weekly, giving all particulars of the progress of the Utah Mine. I

quested to work on Monday, April 28, cleaning machinery and getting ready to hoist water out of shaft. The mine was full of water, or rather up to the tunnel, about 100 ft. above the bottom. The engines went to work at 11 A.M. on May 1; on May 5, at 7 A.M., I had the water all out, and the mine dry. I find it will take 12 or 14 days to put the mine in working condition. It is badly cased, owing to imperfect timbering, &c. The tramways have been afloat, and will be relayed. The drift is full of debris, and a good many new timbers are required. I have a cage working in the shaft that will enable me to clear the mine of waste very quickly. The jiggers have arrived at the mine. We have no plans or specifications to work by in erecting them, and presume we had better wait until the party or person arrive from England to set them up and adjust them, so that they can work successfully from the start. I have taken an inventory of all the tools materials, &c., that were on hand when I took charge, which I presume Mr. Eagle will forward. It is my intention to work only a few men in opening out the property until we get the jiggers to work and concentrate the ore. I will write again on the 16th, hoping to give you more particulars in full about the mine.

**EXCHEQUER (Gold and Silver).**—Mr. L. Chalmers writes (May 5): I have now got the ore tramway (damaged by the heavy snows of last winter) repaired, and conveying ore to the dump ready for the teams. The road will be in order in ten days, when I shall commence hauling ore to the mill. The mill will then be in running order, if nothing unforeseen occurs. I shall then commence putting through all the ore I have on hand. The shaft, I am sorry to say, is still in very hard rock, some idea of which may be formed from the fact that when I was there on Friday the foreman told me he had sharpened 137 drills for one shift, not one little less. Only 4 feet were sunk last week (93 feet in all).

**L. X. L. (Gold and Silver).**—Mr. L. Chalmers writes (May 5): The shaft was sunk 5 1/2 ft. from the 100 ft. level. I think the rock is improving. The water remains about the same. I have had two men getting down ore three days from the upper tunnel, and will continue getting it down until I have 200 tons to 300 tons ready for mill.

**CHICAGO (Silver).**—Mr. W. S. Godbe, general manager (May 7),

reports—Respecting the mine itself, I have pleasure in stating that it is more than has been represented, and will, I firmly believe, pay good dividends for many years to come, and reflect credit upon all concerned. The site for the furnaces, after much careful deliberation, has been determined upon by Prof. Clayton, Mr. H. W. Lawrence, and myself. The distance from the mine to the mouth of the canyon is 1 1/2 miles, thence to the site for the furnaces on Stockton or Rush Lake, not to exceed 5 1/2 miles, thence to Salt Lake City, 43 miles. The smelting works will not, I think, exceed 500L.; at all events, 10,000L, will be sufficient to cover ropeway, tramways, and smelters. The proposed mill may cost 1500L. more. In addition to the foregoing, I have made arrangements to secure a quantity of timber, that can now be cut contiguous to the mine, and delivered for a much less price than it would cost after a while. I have engaged two of the three furnaces contained in the Jacobs and Co.'s works at Stockton for \$800 per month, which I consider a very moderate rental. The profits from the ore I expect during this period would exceed the sum required to pay the guaranteed dividend for three months, at the end of which time (say Aug. 2) I fully believe the new furnaces will be ready for use. There is sufficient ore available, besides an apparently unlimited quantity in the mine, to much more than pay the required dividend. The patent as it now stands covers all our works and improvements, and certainly more of the mine in length than can be worked in a generation. We have the right to follow our vein to the extent of the location—200 feet.

From Mr. A. E. Walton, C.E., the agent commissioned by the company to take the property, May 5—During my visit I thoroughly examined the mine. The main shaft has now attained a depth of about 300 ft.—this passing through large beds of ore. At 200 ft. drifts have been driven, and the faces show considerable mineral. At the end of the shaft a winze has been sunk, and a drift run 25 ft. to the whole of this is ore. There are seven or eight faces in this mine all looking well and promising. The Rambler is 55 ft. down, and shows a vein 5 ft. thick. From my inspection of the Chicago Mine I consider it a valuable property, and with efficient management will, I doubt not, meet what has been affirmed concerning it. The patent has arrived.

**RICA (GOLD WASHING).**—C. R. Clarke, April 16: During the past three weeks I have been almost constantly at La Rica, and shall begin to wash next week. I have the ditch and reservoir completed, the machine set, the pipe all laid down, and nothing to do but finish the bulkhead, which will take one or two days. It will take, I think, about six weeks or two months to wash away the waste and get the mine fairly opened; after that the washing will all be on new drift.

**MALPASO (GOLD WASHING).**—C. R. Clarke, April 16: I sent you by last mail the result of our last clean-up, which is a decided improvement on the one previous, because we did not wash near as much dirt as we did either of the former runs, and we got more gold. I think our next clean-up will be better still.

The streak of good gravel I spoke of in a former letter is improving, it now will average about 4 ft. thick, and is in sight for about 60 ft. across the face. The shaft is not yet down, it will lay idle awhile for want of peons to keep it going night and day; then the feast days come on, and that stopped it again; we are now at work on it, and I hope to finish it soon; it is now down about 24 ft., the last 8 ft. in rich gravel, richer than the streaks we have above, and will be, I think, three or four times as thick. We have been blessed with a very long dry season; in my last I told you that the rainy season had begun, it lasted three days. I am told by Dr. Clemens, the old German gentleman, who has resided here for a number of years, that such a long dry season is very unusual, and I know that this time last year we had plenty of water. The 600 ft. of pipe sent out by the Rydon Company has all arrived in Honda, and a portion of it here at the mine. I shall, after a run or two more, carry the head of my pipe higher up the hill, so as to increase the force of the water; at present I am not using more than half the fall that is attainable, because I had not pipe to reach any further up the hill. I have left the high bank to the east that has the streaks of hard cement up in it, and shall run for the high banks ahead (where the ancients quitted) as fast as possible. The ground I leave will always be at command of the sluice, and can be worked at any time when the company thinks proper. The gravel ahead of the machine is now looking better and gives a better prospect than it has done any time since we began to work, and if only rains and give us a good head of water, I think the results would be very favourable; at present we are displacing but little dirt in comparison with what could be done with double the water.

**UNITED MEXICAN.**—Edward Hay, April 25: Mine of Jesus Maria y Jose: There has been a small increase of yield from the workings on this hitherto unexplored part of the mine, and also the buscones (searchers) have introduced more ore than hitherto.

This arises principally from the works beyond the boundaries of the mine having given 40 cabs of ordinary ore in a week. Since a couple of days these workings have improved materially. The lode is now about 5 fms. broad.—New Concern—Adit of San Cayetano, and Mine of Bueno Ayre: The end of the adit, as reported, has been turned gradually to the west, and is now about north 55° west. We have cut through several raths (walls of the lode) and strips of quartz, with good pintas (appearances). On the southern side of the adit small quantities of water are oozing through the rock, and the frentre, though still in barren mountain, begins to show evident signs of ramification. At a little more than 11 fms. from the mouth of the cross-cut to the north a reliz appeared, running nearly in the same direction as the lode we cut in the adit. The whole end is now in veinstuff.

**NEW ROSARIO.**—Mineral del Monte, April 26: Providence Mine: My last advices to the company that an improvement was apparent in the Providence lode have, I am glad to say, been verified, as the last 11 cabs of ore have given an average assay of 12 1/2 marks, or nearly 4 marks above the first extraction. All our best rocks of ore are raised from the bottom of the lode (i.e., the Carrera lode), which in the Real del Monte Company's property has always proved richer as a greater depth has been attained. We have now 150 cabs of metal in store, the whole of which will fairly average 14 marks to the monton=14L per ton. I purpose to continue sinking our shaft downward for 25 varas (18 1/2 yards) more, and then to drive a second level, at the same time continuing to sink as rapidly as possible 50 varas (37 1/2 yards) deeper. Respecting this mine, Captain Skewells, under whose direction the operations are being carried on, writes as follows:—"The lode in Providence is daily improving, and we can see a good lot of native silver in the stones as we are breaking it away. To-day it is looking much better than I ever saw it before. We ought to carry on this work as fast as we can, as the quicker we sink the shaft and drive our ends the quicker we shall be able to pay our costs, and to give dividends."—Rosario Adit: The Victoria winze is now sunk 28 varas (19 1/2 yards), the ground having become much easier. A few days ago the men came down upon a floor, and after breaking through it the whole of the ground seemed to undergo a change; the metal part of the lode is about 15 in. wide, and I think the whole of it will now be worth saving. The extent to which the great champion lode in the Providence Mine has been already opened is thus described in the *Consolidated* of April 11:—"Reports from our correspondent respecting the properties of the New Rosario Company are favourable in the extreme. In addition to what we have already published, we have the assurance of the daily improving state of the Providence Mine. It is well known that ore exists in the entire length between the two shafts opened on this vein, measuring from

280 to 300 metres, and the width of which, so far as yet discovered, is 5 metres surface work. In the Rosario adit the sinking for the junction of the vein is progressing with good speed. From the above data it is clear that a very large amount of ore can be raised weekly." Taking the metre as only 1 yard, there are at all times about 1000 cabs of ore in the Rosario adit, which is 1000 cabs per week. The Rosario adit is 150 metres long, and 60 yards in depth. If this range of lode should yield only 1 cab per week, there would be upwards of 10,000 tons of ore already discovered.

**SAN PEDRO.**—Richard M. Kitto, April 15: The new shaft is only 4-30 metres below the 150; the shaftmen will at once put down the skip-road to the 135 to this level. The 150, driving south-west from shaft to intersect the main San Pedro, by four men, at \$30 per metre; ground very hard and highly mineralised. The 150 cross-cut, driving towards the manto Verdi is present. In the 135 cross-cut, driving south from the manto Verdi, is present. In the 135 cross-cut, driving south from the manto Verdi, is present. In the 135 cross-cut, driving south from the manto Verdi, is present. In the 135

## COAL AND IRON AT THE ANTIPODES

GOAL AND TRADE.

is satisfactory to note—considering the keenness of the demand throughout the world—that the New Zealanders are showing an increased and increasing disposition to turn to good account ample supplies of coal with which they have undoubtedly been blessed by nature, but which have remained unutilised, in consequence of the want of capital and labour, from which young countries always suffer. It is, of course, clear enough that if New Zealand can contribute even a small contingent to the world's coal supply the whole world will benefit from it, *pro tanto*. Not only will a useful reproductive industry be stimulated in New Zealand, but in some way or other the strain upon the immediately available coal resources of the globe will be lightened. It is with pleasure, then, that we learn by recent advices from New Zealand that a public meeting had been held in one of the New Zealand provinces to urge the Colonial Government to develop what are known as the Malvern Hills coal fields. It was agreed at this meeting to present a memorial to his Excellency the Governor, and a committee was appointed to obtain signatures to the memorial. New Zealand Government has also been considering a proposal to grant terms for the first screw collier put into the coal trade at Port Phillip. An offer has further been made to the County Council of Westland for a lease of 5000 acres for a coal field on the south bank of the Grey river, a part of the same seam as the Brunner Mine. The miners' strike at Newcastle, New South Wales, has happily ended in compromise, but one result of this strike was to carry coal at 20s. per ton from Port Phillip to Melbourne, Victoria, to 4*l*. per ton, and we may depend upon it that a famine price will stimulate energetic Victorians to adopt measures to render impossible any similar check to industry and the well-being. Ordinarily, for some years past coal has ranged in Melbourne at from 22s. to 25s. per ton; but the supply being almost entirely derived from New South Wales, any derangement of New South Wales labour market was immediately felt with great severity. Several public-spirited gentlemen connected with the coal trade have decided on offering a liberal reward for the discovery of a payable seam of coal within a convenient distance of that town. It was intended at first to sink an experimental shaft in the neighbourhood of Airey's inlet, where it is said there are good indications of coal; but this idea was abandoned, it being thought that a hand-drawn wagon and prospect. Increasing attention is also being directed to the utilisation of the coal wealth of Tasmania, and as Tasmania would naturally find a ready market in Melbourne—to meet the demand of the local demand—Tasmanian coal mining would be held out tempting and hopeful attractions to the capitalist. The prospect of increased supplies of Australian, Tasmanian, and New Zealand coal being forthcoming during the next few years is very cheering, but when we come to deal with iron our present view is very scanty. However, Tasmania possesses iron as well as coal and Melbourne capitalists seem disposed to attempt working of Tasmanian iron ores. A "Titantic Steel and Iron Company" has also been formed in the province of Wellington, New Zealand, and the directors have applied for a lease of 8*l* miles of land, from Waitara to Urenui. A meeting of the provisional directors of the Taranaki Steel and Iron Company was held on Jan. 31, and the appointment of the directors was confirmed. A resolution was passed that a formal application should be made for a lease of land; it was also agreed that a prospectus should be issued, and the company should be registered. So that there would seem to be a chance at last of the utilisation of the iron sand which forms a valuable element in the natural resources of New Zealand. It is thought that the working of coal and iron at the Antipodes would very quickly quicken the pulses of Antipodean life. Cheap and plentiful supplies of good workable Australian coal would very greatly assist the projected line of emigrant and produce steamers to the Australian colonies. Without improved communication between Europe and the Australias the tide of emigration must necessarily flow fitfully and slowly; and, therefore, the increased working of Australian coal is really synonymous with accelerated Australian colonisation. Cheap Australian coal also implies a steady, even a rapid, extension of Australian railways.

STEEL RAILS.—The value of steel rails in connection with Cana-  
dian Railways is illustrated in the fact that in the last half-year the Great Western  
Railway Company of Canada only expended 93,180*£*, under the head of mainte-  
nance, as compared with 105,691*£*, in the corresponding period of 1871-2,  
though the traffic was larger and the trains more numerous. The percentage of  
expenditure accordingly declined in the last half-year to 15.64 per cent. of the

steam accordingly defined in the last half year to 15.64 per cent. of the total, against 20.04 per cent. in the corresponding period of 1871-2.

STEAM-ENGINES.—**Mr. R. HANSON**, of Halifax, has patented an invention which relates to compound high and low pressure steam engines, and consists in the employment of two superheaters, whereby, without overheating the steam, it may be sent into the low pressure cylinder at a much higher pressure than by the ordinary methods now adopted, whilst any access of heat given to the first superheater is taken up by the steam in the boiler, and any want of heat it passes from the first superheater is supplied by the steam in the second.

The invention also consists in applying an antiseptic regulator to control

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The Prize Essay—Practical Mining.

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No. VII.

SECOND ESSAY. PAGE I

SECOND ESSAY—PART I.  
**BEST MINING MACHINERY.**  
am induced to enter into competition, knowing that interchange  
of opinion and discussion of such an important topic as this will  
only benefit "A Former Correspondent," who has so munificently  
paid the 20*l.* premium, but also the competitors, and I trust, Sir,  
at the whole of the expense of the individual, to whom I have  
been so fortunate as to be intrusted.

Well, then, the best mining machinery is not always the most modern, as we have sufficient proof of in the good old type of engine, the single-acting Cornish pumping-engine, which is not equalled by any of the new forms now employed; although the duty is said to have dropped off, this is not really the case, the difference of duty as compared with 50 years ago will be found to be owing to the inferior coal now used, as may be verified by the agents' reports of most of our great mines, more especially during the last winter.

If a mine is intended to be permanent, the first requirement in fitting up will be to provide for its efficient drainage, and to effect this in the most economical way must be to use the Cornish single-acting pumping-engine, which engine is universally employed in the Cornish mines, very largely in foreign and continental mines, and is now pumping nearly the whole of the water supply to the inhabitants of London, and from the time when Trevithick first took his engines to Cerro de Pasco, in 1816, erected and set them to work on the top of the Andes, and successfully drained the celebrated mines which are again recently set to work, still employing the same type of engine, which has been constructed in parts sufficiently light for carrying on mules' backs to an altitude of about 15,000 ft., a triumph of engineering skill, and the greatest mining enterprise of its kind in record; from that time to the present no machine has been built that can equal the duty now being obtained from the Cornish engine.

our most successful mining enterprises at home or abroad. On visiting the Grand Junction Waterworks, Kew Bridge, London, last week, I saw one of the noblest pieces of mechanism now in use—an engine with 100-in. cylinder, 11-ft. stroke, equal beam, pumping 6400 gallons of water per minute to a height of 175 ft. on 24 lbs. of coal per horse-power per hour, working without the least shock, vibration, or noise, and this gigantic machine was so completely self-acting that it was entirely under the control of one attendant; engines of the largest size ever constructed on this principle require at one man's attention. The engine by its side a 90-in. cylinder of same class or type as are all the others in this colossal establishment, and does a duty of 105,000,000 lbs. lifted 1 ft. high by 1 cwt. of coal (best coal), as quoted by Mr. A. Frazer, in a paper read before the Society of Engineers by A. Frazer, on the occasion that coal now

in use in London its every-day duty is 90,000,000. All the engines here employed are of the Cornish single-acting type, and a visit to these works will amply repay any mine agent, mining expert, or most qualified engineer.

The largest machine in the world for pumping water is that employed for the drainage of the **Holland Lake**, in Holland, which covers 45,230 acres at a depth of 14 ft., or containing a sufficient quantity of water to supply the inhabitants of London from six to seven years, the cylinders are 12 ft. diameter, working 41 pumps, each 63 in. in diameter, and 10-ft. stroke, each pump lifting 6 tons of water per stroke, and doing a duty of 90,000,000 lbs. raised 1 ft. high, with 1 cwt. of coal, or  $2\frac{1}{2}$  lbs. per horse-power per hour, a duty certainly not attained by the rotary-engine in the best conducted mines or works. Now, as the question of fuel is of the first importance in establishing a permanent mine, the description of engines to be employed must involve the careful consideration of the engineer—in the first place it is usual to learn what is being done in the best practice, and for this purpose I annex a list or table with some data of engines I have visited in London and the county of Cornwall during my summer excursions.—

so above are selected from a Table I have prepared numbering 50 engines, and, if I am rightly informed, they are all made by Harvey and Co, Hayle, Cornwall. Such an extended Table would be too cumbersome for this *Essay*, and the above will answer the purpose intended.

Mr. Warington Smyth has said in his lectures that he has watched a large pumping-engine in the North of England, raising water 105 fms. in 12-in. lifts, seven and half strokes per minute, consuming 25 tons of small coal per day; now, this amount of work is done in Cornwall with less than  $\frac{2}{3}$  tons per day. (See table of Cornish mining engines; ditto London Waterworks engines).

No doubt a visitor to any of the above establishments in London will meet with the same courtesy that has been extended to myself and after an inspection of the above, the unprejudiced engineer will have no hesitation which type of engine it is preferable to adopt.

#### QUICK AND SAMISON'S PATENT PISTONS

QUICK AND SAMPSON'S PATENT PISTONS.

Numbers of these engines have in use Quick and Sampson's patent pistons, and Husband's patent four-beat pump valves and seats, and I think I cannot do better here than quote from the manufacturers' descriptive circular. It is a well-known fact that the present pistons of steam-engines produce enormous friction and rapid wear in the cylinder, more especially when first packed, and produce the same friction whether loaded heavy or light, the work of compressing the packing or screwing down being always unsatisfactory; there is no sure indication of the amount of pressure put on, and oftentimes it is packed so tightly that a tremendous pressure of steam is put on to move it. In the case of springs used in superheated steam they readily lose their elasticity, and are consequently useless; they produce undue friction when first put in, and the piston becomes leaky and non-effective immediately the temper is destroyed. The patent pistons are self-packing, and there is a reduction in friction during the down stroke equal to 1 lb. per square inch, and in the up stroke the piston is so relieved that it has resulted in 10 ft. increased height of water raised, the saving of tallow alone in a 70-in. piston is equal to more than 30% per annum; those pistons have been at work in many of the London waterworks engines, the largest being 112 in. diameter, for three years without let or hindrance, not requiring to stop for repairs or examination, which result must be highly satisfactory, especially in large and deep mines, where the utmost regularity of action must be observed. Its advantages are economy of fuel and increased power, require no packing or attention of any kind, economy in working expenses and material, less cost, better vacuum, and friction decreased to a minimum; to describe this piston in detail a sketch is necessary, which may be obtained of the patentees.

[To be continued in next week's Journal]

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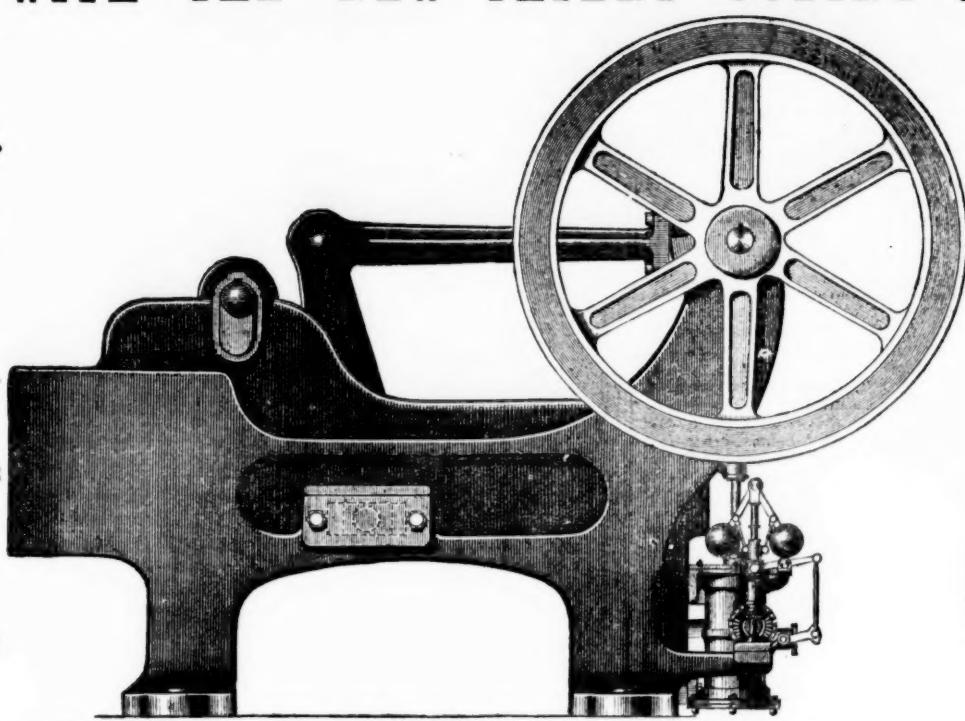
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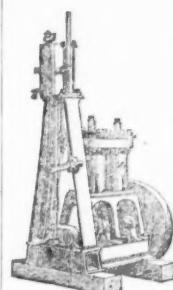
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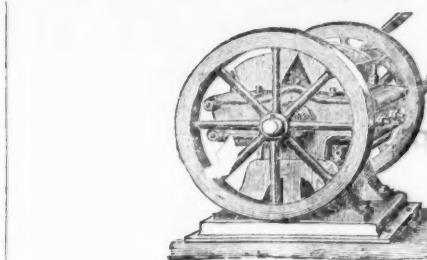
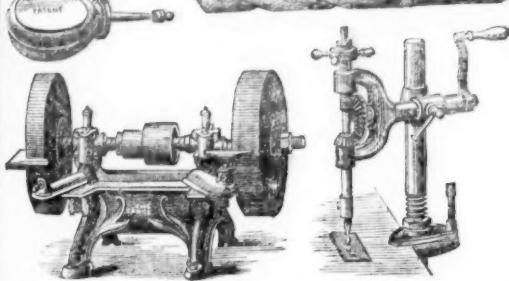
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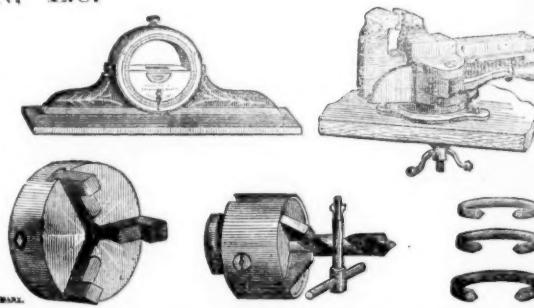
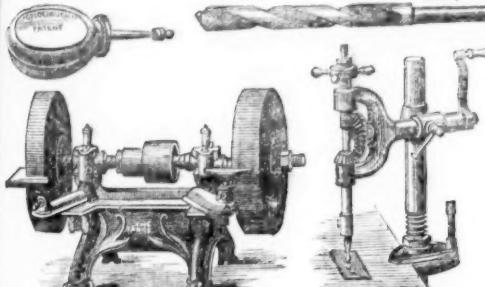
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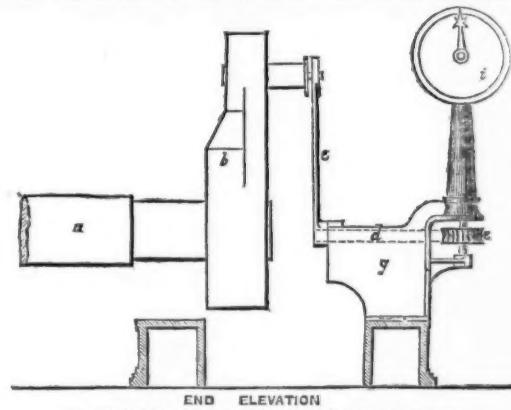
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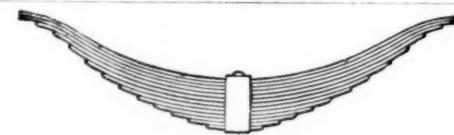
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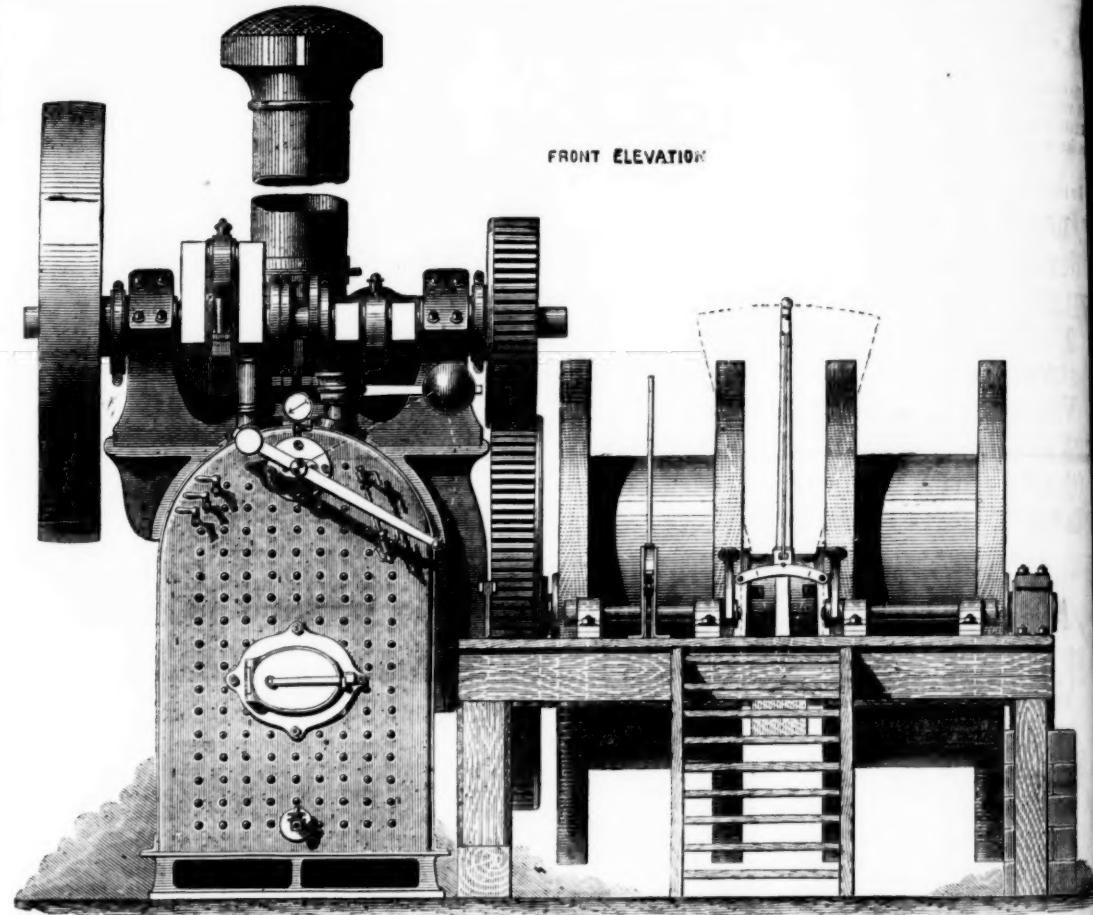
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